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THE UNIVERSITY OF ALBERTA

Prevalence of Disordered Eating Attitudes and Behaviors Among Adolescent Females

by

Cheryl Stephenson

(C)

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

OF MASTER OF SCIENCE

Department of Physical Education and Sport Studies

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Dear Ms. Stephenson,

You are perfectly free to use the Body and Shape Questionnaire in your work. I wish you well.

Yours sincerely,

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Dear Ms. Stephenson:

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Yours sincerely,

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ABSTRACT

There is no clear consensus about the nature and/or cause of eating disorders, but the development of anorexia nervosa and other related eating disorders have been linked to the current cultural demands on women to be thinner. Western society equates thinness with attractiveness and has promoted the "slim physique" as a symbol of female beauty and success. Thus, the "thinness equals attractiveness" premise has forced the female into trying to achieve a body build which is not consistent with the "natural" female figure.

This investigation was primarily descriptive in nature, with its main purpose to describe the eating practices of a sample of 251 female adolescents in terms of such characteristics as preoccupation with weight, food, and eating; desire to be thin; and perceived ideal weight. The study also aimed to estimate the prevalence of disordered eating and weight-control behaviors among female adolescents that are similar to those typically exhibited by anorexic and/or bulimic individuals.

Information was gathered using a single questionnaire that combined the Eating Practices Inventory (EPI), the Eating Attitudes Test (EAT-26), and the Body Shape Questionnaire (BSQ). The administration of the questionnaire took place in a classroom setting during compulsory grade ten physical education classes.

The results of the study indicated that concern about weight and food intake among adolescent females has become very prevalent. More specifically, an exploration of the data demonstrated a universality of the feeling of being fat, and a pervasiveness of dieting and other disordered eating attitudes and behaviors.

Weight opinion data showed that many females perceived themselves to be overweight, when in fact they were not. Over half (57.4%) of the subjects felt they were overweight or very overweight, but only 10.8% fell in the above average health risk zone of the Body Mass Index (BMI).

Findings seemed to indicate that some adolescent females were preoccupied with concerns about eating and body shape and therefore engage in anorexic-like behaviors.

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I. STATEMENT OF THE PROBLEM

Introduction

Since the late 1960's, there has been a shift towards a thinner ideal body shape for females of Western societies. Fashion has placed an enormous emphasis on thinness, and the news media is constantly bombarding us with information that suggests a "superiority" of the slim physique. Garner, Garfinkel, and Olmstead (1983) have stated, "The fashion industry and news media have unwittingly encouraged the association of the svelte image with such positive attributes as success, beauty, wealth, and happiness" (p. 79). In a society where many of our family and social functions revolve around a "celebration feast," this stress on the benefits of dieting and weight loss has become contradictory to our way of life.

While the idealized female body shape has become thinner, there has been a corresponding increase in the average weight for adult women under 30 years of age (Garner, Garfinkel, Schwartz, & Thompson, 1980; Metropolitan Life Foundation, 1983). This discrepancy between the "real" and "ideal" norms for body weight or shape has exerted intense pressure on some women to engage in dieting and weight loss behaviors, in order to achieve the current thinner standard for physical attractiveness. This preoccupation with the pursuit of thinness has been linked to the development of disordered eating and weight control behaviors such as anorexia nervosa (AN) and bulimia (Bruch, 1978; Crisp, 1977; Garner et al., 1980; Hawkins & Clement, 1980; Moore, McAvay & Rodin, 1986; Muuss, 1985; Polivy & Herman, 1985; Pyle, Mitchell, & Eckert, 1981; Schwartz, Thompson, & Johnson, 1981)

Epidemiological findings have indicated that anorexia nervosa is a disorder that occurs predominantly (95%) in females (American Psychiatric Association, 1987), with its peak age of onset usually during adolescence (Halmi, Casper, Eckert, Goldberg, & Davis, 1979; Mann, Wakeling, Wood, Monck, Dobbs, & Szmukler, 1983; Russell, 1983). Bulimia has also been shown to be more prevalent in the female population, and usually begins in adolescence or early adult life (American Psychiatric Association, 1987)

An increase in the prevalence of disordered eating behaviors among school age and young adult females, has been reported by various researchers. Some have indicated an increase in primary or clinical AN (Crisp, Palmer & Kaluccy, 1976; Pope, Hudson, Yurgelun-Todd & Hudson, 1984; Willi & Grossman, 1983), while others have described the existence of mild or sub-clinical eating disorders (Button & Whitehouse, 1981; Clarke & Palmer, 1983; Cooper, Waterman & Fairburn, 1984; Mann et al., 1983; Nylander, 1971; Russell 1979). Still others have reported on the prevalence of bulimia and binge eating in female adolescent and college populations (Crowther, Post & Zaynor, 1985; Greenfeld, Quinlan, Harding, Glass, & Bliss, 1987; Gross & Rosen, 1988; Hawkins & Clement, 1980; Halmi, Falk, & Schwartz, 1981; Johnson, Stuckey, Lewis, & Schwartz, 1983; Katzman, Wolchik, & Braven, 1984; Kelly, Patten, & Johannes, 1982; Moss, Jennings, McFarland, & Carter, 1984; Pyle et al., 1983). Regardless of the severity or type of eating disorder, research has demonstrated that they are becoming a serious public health problem. It is the increase of the incipient or milder forms of anorexia nervosa and/or bulimia in the adolescent female population that has prompted this study (Nylander, 1971; Button & Whitehouse, 1981; Polivy & Herman, 1985).

The Purpose of the Study

The specific objectives of the present study were to:

(a) describe the eating practices of a large sample of female adolescents in terms of such characteristics as preoccupation with weight, food, and eating; desire to be thin; and perceived ideal weight,

(b) estimate the prevalence of disordered eating and weight control behaviors among female adolescents, that are similar to those typically exhibited by anorexic and/or bulimic individuals, and

(c) examine the relationship between eating practices and anorexic-like behaviors in female adolescents.

(d) determine the attitudes and behaviors concerning eating disorders among a population

receiving very little previous study; that being female adolescents in Alberta schools.

Justification For the Study

The review of literature will deal in depth, with the theoretical background from which this study was based. Some of the research describing the underlying factors for the justification of the study will be highlighted here.

Research has indicated that the incidence and prevalence of AN has increased in the last 20 to 30 years (Duddle, 1973; Jones, Fox, Babigan, & Hutton, 1980; Willi & Grossman, 1983). This apparent increase in anorexia nervosa and associated disorders is high enough to be considered a significant health problem, especially since many cases of primary and/or incipient anorexia nervosa and bulimia go unreported and untreated.

This study was concerned only with the prevalence of disordered eating and weight control behaviors among female adolescents for a number of reasons. Firstly, the cultural standard for thinness seems only to apply to the female gender. Females have been shown to prefer the ectomorphic body type, while males aspire to the mesomorphic build. Huenamann, Shapiro, Hampton, & Mitchell (1966) studied approximately 1000 American teenagers and found that the males' main concern was to gain weight, size, and strength, while the females' main priority was to lose weight, and to attempt to achieve this by dieting.

Secondly, because the adolescent female is especially conscious of, and preoccupied with, her body and appearance, she must be considered more vulnerable to influences from fashion and other trends in society. Food intake is usually increased during puberty and normal girls more than double their stored fat during the adolescent growth spurt (Crisp, 1981-1982; Russell, 1983). This biological increase in percent body fat may negatively affect the female's self-esteem, possibly leading to disordered eating and weight loss behaviors. Muuss (1985) has stated,

> The association of self-esteem with body image is much stronger in adolescent females than in males. As a result, females have a greater tendency to watch their food intake, and also to be calorie conscious, to diet, and to become anorexic or bulimic. (p. 531)

Therefore, what might first have started as a simple diet for cosmetic reasons, may develop

into marked problems in the area of weight concern, and ultimately culminate in some form of eating disorder.

Fries (1974) has proposed a "continuum hypothesis" suggesting that dieting for understandable cosmetic reasons may lead to anorexic behaviors or even develop into the classical picture of anorexia nervosa. Others have suggested that dieting may increase susceptibility to loss of control "binge episodes," and ultimately lead to the onset of bulimia (Hawkins & Clement, 1980; Polivy & Herman, 1985; Pyle, Mitchell, & Eckert, 1981). Whatever may be the case, the possibility of anorexia and/or bulimia occuring along a continuum provides justification for the study of eating disorders among the general adolescent female population. Garfinkel and Garner (1982) have stated, "it is important to recognize the existence of young women who have weight concerns that interfere with their psychological well-being but who nevertheless do not have full-blown anorexia nervosa" (p. 33).

The last justification for this study was to add to the body of knowledge concerning disordered eating and weight control behaviors among the adolescent female population in Canadian schools. If a percentage of school age females do display disordered eating and weight control behaviors, it is important that individuals who hold influential positions are aware of this. Health and physical education teachers, guidance counsellors, coaches, and fitness leaders, must help adolescents to recognize acceptable and realistic weights for their body structure and height, as well as understand the benefits of losing weight in ways that will not be destructive. Beaven (cited in Schleimer, 1983) has supported this reasoning with the following statement,

> Middle weight teenage girls .... should be helped to understand that the mannequin image cannot become a reality for the majority and that other goals in life should be presented as more desirable than a preoccupation with weight and appearance - which eventually may lead to anorexia nervosa. (p. 11)

It is hoped that the information provided by this study will help school personnel realize that eating disorders are becoming a health problem that can be addressed and identified within a school setting, if an awareness of the problem first exists.

Hypotheses

The author intends to adopt the following hypotheses:

1. The general female adolescent population is differentially preoccupied with weight, food, and eating; and a desire for thinness.
2. Similar characteristics as those exhibited by anorexic and/or bulimic individuals are evident among the general adolescent female population.
3. The desire to be thin in the normal adolescent female population is positively correlated with anorexic-like behaviors.

Definition of Terms

1. Anorexia Nervosa (AN)

AN is an eating disorder that strikes primarily adolescent girls and young women (90 - 95% of all victims are female). The diagnostic criteria for AN as given in the *Diagnostic and Statistical Manual* (DSM-III-R) of the American Psychiatric Association (1987) are as follows:

a. Refusal to maintain body weight over a minimal normal weight for age and height, e.g., weight loss leading to maintenance of body weight 15% below that expected; or failure to make expected weight gain during period of growth, leading to body weight 15% below that expected.

b. Intense fear of gaining weight or becoming fat, even though underweight.

c. Disturbance in the way in which one's body weight, size, or shape is experienced, e.g., the person claims to "feel fat" even when emaciated, believes that one area of the body is "too fat" even when obviously underweight.

d. In females, absence of at least three consecutive menstrual cycles when otherwise expected to occur (primary or secondary amenorrhea).

AN may occur distinctly or it may be associated with bulimic episodes. Primary AN has been described as the "relentless pursuit of thinness," and a "phobic avoidance of the dreaded fate of being 'too fat'" (Bruch 1981, p. 213).

2. Bulimia

Bulimia is an eating disorder characterized by compulsive eating binges, often followed by self-induced vomiting and laxative abuse. Like AN, the bulimic has a desire for thinness accompanied by obsessional thoughts of food and vomiting. Bulimia was once categorized under the definition for AN, but now has its own distinct classification. The DSM-III-R (1987) diagnostic criteria for bulimia are as follows:

a. Recurrent episodes of binge eating (rapid consumption of a large amount of food in a discrete period of time).
b. A feeling of a lack of control over eating behavior during the eating binges.
c. The person regularly engages in either self-induced vomiting, use of laxatives or diuretics, strict dieting or fasting, or vigorous exercise to prevent weight gain.
d. A minimum average of two binge eating episodes a week for at least three months.
e. Persistent overconcern with body shape and weight.

Most people with bulimia are within a normal weight range, but some may be slightly underweight, and others may be overweight. In some cases a person can be concurrently diagnosed with bulimia and AN. Pyle et al. (1981) state, "Bulimia and anorexia nervosa represent variants in a spectrum of eating disorders .... although these problems can coexist ... they can also occur independently of each other" (p. 64).

3. Eating Practices

Eating practices were measured by the Eating Practices Inventory (EPI). This instrument was used to measure such characteristics as preoccupation with weight, food, and eating; desire to be thin; and perceived ideal weight. The questionnaire employed an adaptation of the one used by Greenfeld, Quinlan, Harding, Glass, and Bliss (1987).

4. Eating Attitudes

Eating attitudes were measured by the Eating Attitudes Test (EAT) (Garner & Garfinkel, 1979). The EAT is a self-report questionnaire that has been used as a screening devise for assessing the symptoms commonly found in AN.

5. Body Shape Attitudes

Body shape attitudes were measured by the Body Shape Questionnaire (BSQ) (Cooper, Taylor, Cooper, & Fairburn, 1987). The BSQ is a self-report questionnaire that has been constructed to provide a means of investigating the role of concerns about body shape in the development, maintenance, and treatment of AN and bulimia.

6. Eating Disorder

An individual with an eating disorder displays abnormal eating attitudes and behaviors. Eating disorders may range in severity from mild or incipient (Nylander, 1971), to severe, such as primary anorexia nervosa and/or bulimia.

7. Anorexic-Like Behavior

Abnormal eating attitudes and behaviors that do not fulfill strict diagnostic criteria for AN and/or bulimia, but still present serious problems of eating and weight concern.

8. Body Mass Index (BMI)

The ratio of body weight divided by height squared (kg/m^2).

Delimitations

1. The subjects were delimited to 251 adolescent females enrolled in compulsory Physical Education 10 at two high schools in Red Deer, Alberta, Canada.
2. The study was delimited to the assessment of disordered eating and dieting behaviors and attitudes as measured by:
   a. Eating Practices Inventory (EPI)
   b. Eating Attitudes Test (EAT)
   c. Body Shape Questionnaire (BSQ)
3. The assessment of body structure was delimited to the measurement of weight and height, and the subsequent calculation of body mass index (BMI).

Limitations

1. The study was limited to one sex and may therefore only be generalized to females.
2. The study was limited to one age group and may therefore only be generalized to populations between 15 and 17 years of age.
3. The study relied on information obtained by questionnaires which were limited in their value to research in the following ways:
   a. The fatigue effect of long questionnaires.
   b. Misinterpretations of questions.
   c. The questionnaires were self-report instruments, therefore vulnerable to distortion due to response-style bias or inaccurate reporting by the respondents.
   d. Limited to self-reported behaviors and attitudes as students perceived them and were able to report them in questionnaire format.
   e. Biasing effects of denial on the questionnaire responses. If respondents did have true anorexia nervosa, they may well have adopted a defensive attitude towards questions dealing with the characteristics of the disorder, therefore distorting self-evaluation data.
4. The study used a sample of grade 10 girls enrolled in compulsory physical education 10. Therefore, any girls who had a medical exemption from physical education classes, did not take part in the study.
5. Respondents may have been sensitized in some systematic way due to the fact that the questionnaires were administered during a physical education class by a person known to teach physical education. This may have affected the responses on one or more of the instruments.

II. REVIEW OF LITERATURE

Socio-Cultural Influences in Eating Disorders

There is no clear consensus about the nature and/or causes of eating disorders, but the development of anorexia nervosa (AN) and other related eating disorders have been linked to the current cultural demands on women to be thinner. The contemporary Western society has promoted the "slim physique" as a symbol of female beauty and success. Many of our sports, television, and motion picture celebrities present an "ideal" female model that is far from the norm of our society. In the 60's, the "full", curved figure of Betty Grable set the standard. With the introduction of Twiggy in the 70's, came the thinner ideal for women. Today in the 80's, the thin fit figure of Jane Fonda has become the ideal. However, in an article entitled "Hooked on Perfection," it is suggested that Ms. Fonda was bulimic as a teenager, abused speed and diuretics in her thirties, and is presently involved in the practice and promotion of excessive weight control (Verve: Aug/Sept., 1986).

Evidence of the shift towards a thinner "ideal" shape for females has been documented in the research literature. Garner and co-workers (1980) reported that two exemplars of "ideal" feminine beauty, Playboy Centerfolds and Miss America contestants, have become thinner over a 20 year period from 1960 to 1980. Also, from 1970 to 1980, they found that the Pageant winners were usually thinner than the average contestant. More evidence for a growing emphasis on weight reduction as reflected by a significant increase in the number of diet articles in six major women's magazines, was also found by Garner and associates. The mean number of articles from 1960 to 1970 was 17.1, compared to 29.6 for the 1970 to 1980 time period. Muuss (1985) conducted a comparison of frequency of weight and body messages between four women's and four men's magazines which revealed the following ratios in the females' favor: ads for diet foods were 63 to 1; articles dealing with body shape or size were 96 to 8; and ads for food and drink were 1,179 to 10.

Examples of how cultural ideals have influenced female behavior by defining what is acceptable, can be traced back in history. Garfinkel and Garner (1982) have highlighted the

practice of footbinding in China and the wearing of corsets in the 19th century as two "examples of potentially unhealthy customs which derived from the expectations that women conform to an idealized appearance" (p. 105). Today, the "thinness equals attractiveness" premise has forced the female into trying to achieve a body build which is not equal to the "natural" female figure. Rodin, Silberstein, and Striegel-Moore (1985) have concluded that, "the male 'ideal' body of current society more closely resembles the 'natural' body most men assume, while the female 'ideal' is far thinner than the 'natural' female figure" (p. 288). Assuming that body weight and size are normally distributed, only a small percentage of women can be expected to "naturally" measure up to this ideally thin standard. Women therefore, have been forced into participating in unhealthy practices in order to achieve the current thinner ideal.

This is especially true for the adolescent female. There is probably no other group that is more concerned about the size and shape of their body than the female adolescent. But during adolescence when appearance is so important to self-esteem; feminine pubertal body shape changes are occurring, which "naturally" increases the female's percent body fat. Rodin et al.(1985) have stated, "with increased estrogen and progesterone levels at puberty ...[the female develops the] biological machinery that increases her fat-making capacity at precisely the time when she is becoming most concerned with her appearance" (p. 284). Conversely, boys tend to gain their weight at puberty in the form of muscle and bone, as opposed to adipose tissue.

Thus, the discrepancy between the adolescent female's "goal" weight and "natural" weight has increased her vulnerability for the development of unhealthy eating attitudes and behaviors. Crisp (1977) has stated,

> Females, within a very short time of crossing their pubertal "threshold" usually wish to minimize their shape and often construe themselves as "fat" when it is evident that they are not obese. The majority attempt to "diet" and often succeed, at least intermittently, in substantially reducing the amount of carbohydrate in their daily food intake. (p. 231)

It seems that many people have capitalized on today's weight-obsessed society. This is evidenced by the number of "miracle" diets and weight-loss programs on the market today.

One phenomenal best seller worth noting is the *Beverly Hills Diet* (Mazel, 1981), which advertises a form of bulimia as a cure for obesity. The popularity of this diet book illustrates that women are no longer willing to wait for a safe, scientific method of weight control. Wooley and Wooley (1982) state, "the prevailing belief is that nothing is worse than being fat; that no price is too high for thinness, including health" (p. 65).

This author does not wish to suggest that cultural influences are the only predisposing factors in the development of eating disorders. A variety of factors within the individual, family, and culture have been shown to play a role in the development of anorexia nervosa and related eating disorders (Garfinkel & Garner, 1982; Garner et al., 1980; Muuss, 1985; Schwartz, Thompson & Johnson, 1982). The literature does however, seem to suggest that over the last several decades, the cultural shift in the aesthetic ideal for females towards a thinner body shape, may be one factor that has led to an increase in the prevalence of female eating disorders.

Feeling Fat in a Thin Society

The emphasis that culture has placed on thinness has developed many anti-fat attitudes that start early in life. Susan and Wayne Wooley and their associates, have compiled a number of studies which document the stigma and hatred directed towards obesity in childhood. Cited in Wooley and Wooley (1982), were the following examples: kindergarten children showed significantly greater preference for a thin doll over a fat doll; and prospective parents judged a drawing of a chubby child less friendly, lazier, more stupid, dirtier, more immature, less desirable, and less likeable than drawings of a thin and medium built child. In other research on obesity, Wooley and Wooley (1979) stated in their conclusion,

> These studies document the hatred of obese children by other children and by adults. The impact this hatred has on the individual child is probably irreversible. It is not only the obese child who suffers from this hatred; anti-fat attitudes learned in childhood, no doubt become the basis for self-hatred among those who become overweight at later ages, and a source of anxiety and self-doubt for anyone fearful of becoming overweight. (p. 77)

The fear of becoming overweight has led to many unhealthy attitudes and behaviors, especially in females. In the *Beverly Hills Diet*, Mazel (1981) states, "being fat is an

obscenity - we are shunned, scorned, and ridiculed. A failure for all to see - and mock."

Kelly and co-workers (1982) collected survey data from 1298 females and 968 males aged 13 to 18 years, concerning behaviors and attitudes regarding eating, food, weight, and physical appearance. It was shown that a significantly higher percentage of females than males frequently worry about being or becoming overweight. Almost 50% of the females but less than 10% of the males indicated that they were dieting at the time of the study. It was also found that expressions of positive attitudes toward losing weight and being thin were three to four times more prevalent among females.

Grant and Fodor (1986) explored the relationship between anorexic behavior and selected dimensions of body image in 55 males and 113 females aged 15 to 18 years. They found that there were significant differences between males and females and that the less attractive a female adolescent perceived herself, the higher was the tendency toward developing an eating disorder.

Moore, McAvay, and Rodin (1986) conducted two studies on a total of 118 female undergraduates to investigate the psychological and behavioral variables associated with feeling fat. They found that many women at or below their weight norm, especially those that were highly perfectionistic and perceived strong social pressure towards thinness, felt they were fat. They further proposed that women who feel fat hold self-schemas that are strongly weight relevant, and will feel heavier than those who do not, even if their actual weight is identical.

Eisele, Hertsgaard and Light (1986) investigated 385 females aged 12 to 14 years, to identify factors related to eating disorders in young adolescent girls. Their results showed that while 81% of the subjects were within the range for ideal weight or were underweight, 78% (272) preferred to weigh less. Only 14% (49) were satisfied with their current weight, and 8% (30) wanted to weigh more.

Greenfeld and associates (1987) conducted a questionnaire study on the eating behaviors and attitudes of 424 males and 337 females, ranging in age from 13 to 19 years. Their results indicated that concerns over weight, body image, dieting and eating behaviors were significantly more prevalent among female subjects. Of the females, 81% reported often

feeling fat, as opposed to only 26% of the male subjects. The percentages of females that reported using crash diets and fasting for more than one full day were 43% and 39% respectively. Only 5% of males employed crash diets and only 12% often fasted more than one day per week. While 46% of the females and 17% of the males described themselves as overweight, only 12% of the females and 23% of the males were actually overweight. From the results of their study, the authors concluded that "atypical eating behaviors were more highly correlated with students' subjective weight opinion than with the actual degree of under- or overweight" (p. 105).

Kaplan, Busner and Pollack (1988) studied 344 junior and senior high school students to examine the relationship between perceived weight, actual weight, and depressive symptoms. They found that subjects who believed themselves to be of normal weight had significantly lower depression scores. They also found that, in accordance with the cultural ideals for male and female body types, males were less depressed if actually overweight (male ideal of body mass and muscularity), and females were less depressed if actually underweight (female ideal of thinness).

In February of 1984, Glamour Magazine conducted a survey of 33,000 women dealing with how they felt about their bodies. They found that 75% of the respondents felt they were "too fat," although only 25% actually weighed above the 1959 Metropolitan Life Foundation norms for height and weight. They suggested that, "those who feel too fat share many of the same feelings as those who are too fat" (p. 198). Of the females surveyed, 41% were either moderately unhappy or very unhappy with their bodies. A majority reported that they felt either "dissatisfied" with or "ashamed" of their stomachs (64%), hips (61%), and thighs (72%). Wooley and Wooley (1984a) are quoted in the article as saying, "what we see is a steadily growing cultural bias - almost no woman, of whatever size, feels she's thin enough" (p. 199). It is further reported that 80% of the respondents felt they had to be slim to be attractive. The universality of the feeling of being "too fat" is definitely highlighted by the results of this survey of American women. These results however, must be evaluated cautiously since the survey was based upon voluntary postal responses.

The pervasiveness of dieting behaviors among females in response to this "fear of fatness," has been reported by various other researchers. Huenemann et al. (1966) reported that large numbers of American school girls described themselves as fat, the numbers increasing from 43% at grade 9 to 56% at grade 12. Conversely, most boys either thought they were too thin or seemed satisfied with their body structure. The authors further suggested that of the 1000 teenagers that were interviewed and examined annually during a 4-year period, when the girls felt too fat they dieted, unlike the boys who tended more to correct their weight by physical exercise.

Dwyer, Feldman, Seltzer, and Mayer (1969) investigated 466 female and 145 male adolescents, and found that 60% of the females had been on reducing diets by the time they became seniors in high school. They also found that dieting behavior was related to not just body weight and/or body fatness, but also to characteristics of body build and a perception of being overweight.

Nylander (1971), in studying 1129 boys and 1241 girls aged 14 to 19 from a Swedish town, found that most girls had at some time felt they were fat, the frequency increasing progressively from 50% at age 14 to about 70% at age 18. The frequencies reported for boys of the same age were much lower (12 - 29%). He also reported that 10% of the 14 year-old girls and 40% of the 18 year-old girls, who thought that they were too fat, had tried to diet. Dieting was seldom reported among boys at any age.

Further examples of the pervasiveness of dieting among Western societies have been reflected in the results of the 1978 Nielson Survey, and the 1981 Canada Fitness Survey. The Nielson survey showed that 45% of all American households have somebody dieting during the course of the year. In addition, 56% of all women aged 24 to 54 years reported that they diet, and 76% of those acknowledged doing so for cosmetic rather than health reasons (Nielson, 1979). The Canada Fitness Survey (published in 1982) reported on differences between male and female concerns over weight control. Fifty-one percent of females versus 31% of males age 10 to 19 stated that weight control was a very important reason for being active. Many adolescent girls also reported an association between smoking and weight control. Sixty

percent of females versus 39% of males of the same age, considered weight control as very important to their well-being.

Schwartz and associates (1982) have suggested that our new cultural obsession has become the relentless pursuit of thinness. They state, "concerns about diet and exercise have shifted from a growing leisure time hobby to a national obsession" (p. 20). This type of thinking has led researchers to the investigation of the relationship between dieting behaviors and the development of eating disorders.

The Continuum Hypothesis

A review of the literature has demonstrated that several studies exist dealing with the occurrence of dieting in the initial stage of anorexic or bulimic behaviours. Fries (1974) proposed a "continuum hypothesis," suggesting that,

> "true" anorexia nervosa may be considered as the final stage after a continuous change from conscious, voluntary dieting of an often apparently justified cosmetic nature into a more automatic, uncontrollable behavior with loss of insight, denial and defect body-image perception. (p. 40)

Thompson and Schwartz (1982) have suggested that "it may be useful to view anorexia nervosa on a continuum of dieting, eating and body preoccupation patterns in the general population" (p. 49).

Rodin et al.(1985) in a review of the literature concerning women and weight, have proposed that, "weight concerns and dieting are normative for most women, at least in Western society, and that eating disorders may be best understood as a likely consequence of this 'normative' behavior when taken to the extremes" (p. 269). In Nylander's 1971 study of 2370 teenagers from Sweden, it was concluded that nearly 10% of all girls reported that they had developed physical and mental symptoms in connection with dieting, of the same types that occur in AN. Nylander argued further that prolonged and intense dieting produces starvation symptoms that actually may lead to the expression of a mild or severe form of anorexia.

Button and Whitehouse (1981) have coined the phrase "subclinical anorexia nervosa" for those disorders which "while not fulfilling strict diagnostic criteria, present serious

problems of eating and weight concern" (p. 509). They concluded that 5% of post-pubertal females from a sample of 466 female college students in Great Britain, developed a subclinical form of AN. In addition, they interviewed 28 students who scored in the "anorexic" range of the EAT-40 measure, and found that most of them had started dieting for cosmetic reasons, but subsequently developed marked problems in the area of weight concern, which in some cases had culminated in the anorexia nervosa syndrome.

Dieting of some sort, also seems generally to have preceded the onset of binge eating and/or bulimia. In an article entitled "Dieting and Binging: A Causal Analysis," Polivy and Herman (1985) have suggested that dieting usually precedes binging and that perhaps dieting is the disorder that we should be attempting to cure. They state "the pressures to diet that made anorexia nervosa the disorder of the 1970's may thus make bulimia the disorder of the 1980's" (p. 200).

Pyle and co-workers (1981) reported that in 30 out of 34 cases of bulimia, the onset of the disorder coincided with a period of dieting. Boskind-Lodahl and Sirlin (1977) reported that in each case of 100 women displaying "bulimarexia" symptoms (alternating episodes of binge eating and rigid dieting), the young women's efforts to perfect herself through rigid dieting led to her first eating binge.

Johnson et al.(1983) conducted a survey study of 509 cases of self-reported bulimia. In their conclusion they have stated,

> There seems little doubt that thinness is a more highly valued expectation for women than men, and that many women in the current sample began purging techniques to lose or maintain weight when they became fatigued or discouraged with restrictive diets. (p. 170)

Thus, the attempt to maintain weight below the body's natural "set point," through restrained eating or dieting efforts has been shown to increase the susceptibility to anorexic or bulimic behaviors.

Garner, Olmsted, and Garfinkel (1983) have demonstrated though, that while weight preoccupied women and AN patients do show some similarities, there are also many differences. They administered the Eating Disorder Inventory (EDI) to 237 female college students, 66 female ballet students, and 49 female AN patients. They then identified a group

of 38 weight preoccupied (WP) subjects and compared them to the AN group. Their results indicated that the AN and WP groups were indistinguishable on the Drive for Thinness, Body Dissatisfaction, and Perfectionism EDI subscales, but there were significant mean differences between the groups on the Ineffectiveness, Interpersonal Distrust, Interoceptive Awareness, and Maturity Fears subscales of the EDI. Therefore, their results supported a model in which certain features of AN do occur on a continuum, while other traits tend to differentiate weight-preoccupied and AN groups. Garner et al.(1983) further speculated, that while "chronic dieters may be motivated more by a desire for physical attractiveness and social approval, the anorexic patient may limit intake to gain a sense of psychological organization" (p. 19).

Prevalence of Binge-eating and Bulimia

The research to date, has suggested that binge eating tendencies and bulimia, have become evident in growing percentages among female high school and college populations. Bulimia can occur independently or in conjuction with AN. In clinical populations, about 50% of AN patients have been shown to display fairly regular binge eating episodes (Fairburn & Cooper, 1983; Polivy & Herman, 1985). Also, the incidence of bulimia as a sub-group of AN patients has been shown to vary from 16% to 32% (Lacey, 1982).

Bulimic behaviors have been shown to have their onset during adolescence (Hawkins & Clement, 1980; Pyle, Mitchell & Eckert, 1981; Polivy & Herman, 1985). Gross and Rosen (1988) have stated, "a bulimic episode during adolescence appears to be a risk factor for chronic eating disorders" (p. 51). Following are a number of studies that have reported on the prevalence of binge eating and bulimic behaviors among adolescent female populations.

Moss and associates (1984) administered the EAT-40 to 151 tenth grade girls from a small northwest Georgia community, to determine the prevalence of symptoms associated with bulimia. Their results indicated that 16.6% of the subjects reported frequent eating binges, while only 7% reported frequent vomiting episodes after eating. Forty-three percent of the subjects reported that they were terrified of being overweight, 39% were preoccupied with a

desire to be thinner, and 35% were preoccupied with the thought of having fat on their bodies. It was estimated that the frequency of bulimia in this population was 6 to 7 percent on the basis of a binge-eating criterion.

The prevalence of bulimia and binge eating in 363 adolescent girls, grades 9 through 12, was investigated by Crowther, Post & Zaynor (1985). Their results indicated that 46% of the subjects reported engaging in episodes of binge eating and acknowledged the use of self-induced vomiting (11.2%), laxatives (4.7%), and fasting (36.4%) as methods to control their weight. They estimated that 7.7% of the girls met the DSM-III criteria for the diagnosis of bulimia, but that the prevalence rate decreased to 2.8% when the criteria were modified to require the presence of at least weekly binging and purging only via self-induced vomiting or the use of laxatives. In addition to this data, Crowther and associates found that there were no significant differences between the bulimic and normal groups in terms of actual weight category, but 78.6% of the bulimic group as opposed to 20% of the normal group, perceived themselves as overweight.

Hendren et al.(1986) reported on eating-disordered symptoms among 592 female adolescents beween the ages of 12 and 18 from two private schools in the metropolitan Washington, D.C., area. These subjects were considered to be a "high risk" population due to their upper-middle class status. It was found that about 18% of the subjects reported one or more major symptom of an eating disorder. Laxative use was reported by 2.3% of the subjects, vomiting by 9%, and fasting by 7.4%. An eating disordered (ED) and a non-eating disordered (NED) group, were thus identified and results showed that binge eating occurred in approximately 44% of the NED subjects and 68% of the ED subjects.

Greenfeld and associates (1987) administered a questionnaire on eating behaviors and attitudes to 424 males and 337 females, ranging in age from 13 to 19 years. The subjects were drawn from a large private preparatory boarding school located in a small New England town. There were 4% of the females and 0.8% of the males that met strict DSM-III criteria for bulimia (including at least weekly binge eating). No subjects met the DSM-III criteria for AN. When the criteria requirement was dropped to only monthly binging, 14.1% of the

females were affected. A total of 44.6% of the females and 16.4% of the males reported that they had "uncontrollable urges to eat and eat until they felt physically ill."

An 146-item questionnaire was developed by Gross and Rosen (1988) to examine bulimic behaviors in a diverse sample of 1373 adolescent girls and boys from three public high schools in the Northeast United States. Bulimia was identified in 9.6% of the girls and 1.2% of the boys. All of the male bulimics, and 69% of the female bulimics, engaged in at least weekly binge-eating. They reported that bulimics exhibited more negative body image, negative self-esteem, social anxiety, and depression than normals. The study also found that bulimia was equally likely to occur in any social class, which as they suggested, indicates that, "socio-cultural influences which underlie bulimia have permeated all levels of the social hierarchy" (p. 59).

The prevalence of binge eating and other bulimic behaviors have also been documented among a variety of young adult women populations. Hawkins and Clement (1980) developed a self-report measure of binge eating tendencies and administered it to 185 female and 65 male, college undergraduates. In addition, a clinical sample of 26 overweight college females (mean excess weight of 40%) participated in the study. Of the college undergraduates, 79% of the females and 49% of the males reported binge eating occurrences. One-third of the normal weight subjects and 40% of the overweight subjects reported binging at least once per week. Three-quarters of the entire sample population indicated that their binge eating tendencies began between the ages of 15 to 20 years. The authors also found a correlation between being overweight and the severity of the binge eating problems. Overweight subjects reported more severe binge eating tendencies than normal weight subjects. The severity of the binge eating was also associated with the degree of dieting concern.

Halmi, Falk and Schwartz (1981) developed a questionnaire to determine the prevalence of bulimia, and surveyed 355 summer session college students aged 14 to 67 (mean age of 25.6 years). Their results indicated that 13% of the normal college population (87% female and 13% male) experienced all of the major symptoms of bulimia as outlined in the DSM-III diagnostic criteria. Purging behavior, defined as self-induced vomiting or laxative

use, was reported by approximately 10% of the respondents. It was suggested that this rather high rate was indicative of a serious behavioral problem especially when coupled with binge eating. The investigation also found a significant relationship between individuals who experienced the symptoms of bulimia and a history of being overweight or being in the upper portion of a normal weight range.

Pyle and co-workers (1983) developed a 43-item questionnaire to assess the prevalence of bulimia in a population of 1355 university students. A comparison group of 37 female bulimic patients was also surveyed. A "bulimic" student group which included 4.1% of the total population (7.8% female and 1.4% male) was formed on the basis of some DSM-III criterion. When an additional criterion, which included weekly binge eating, was added, the "bulimic" student group was lowered to 2.1% of the respondents (4.5% of females, 0.4% of males). Many of the non-bulimic students (41% of males and 57.4% of females) admitted to binge eating episodes and 34.6% admitted to having attempted specific weight-control methods (47% of these were female). The study also indicated that the "bulimic" female students differed from the female bulimic patients in their use of fasting instead of self-induced vomiting for weight control, and in their tendency to be overweight.

Pope et al.(1984) found that in a total of 1060 students from two colleges and a secondary school, 1.0% to 4.2% of the females met DSM-III criteria for a history of AN (with or without a history of bulimia), and an additional 6.5% to 18.6% of the females met DSM-III criteria for a history of bulimia alone. In total, 15.4% or 84 out of 544 of the female respondents met DSM-III criteria for a major eating disorder, while no male students could be similarily diagnosed.

The prevalence of frequent binge eating and bulimia among 485 female and 327 male college students was investigated by Katzman, Wolchik, and Braver (1984). A total of 49% of the respondents reported binge eating episodes (56% of females and 38% of males). While 56% of the women reported binge eating, only 7.2% reported eight or more episodes per month. A total of 4% of the women sampled fulfilled operationalized DSM-III criteria for bulimia.

Fairburn and Cooper (1983) conducted two community studies in Britain, by administering a questionnaire on weight and eating habits along with the EAT-40 and the General Health Questionnaire (Goldberg & Hillier, 1979). In the first study, over 1000 women replied to a popular women's magazine that requested a response from people who were using self-induced vomiting as a means of weight control and were willing to complete a questionnaire. Of the 669 females who completed and returned the questionnaires, 620 were currently using vomiting to control their weight. Four-hundred-ninety-nine or 83% of the 620 respondents fulfilled conservative diagnostic criteria for bulimia and 19 or 31% fulfilled broad diagnostic criteria for anorexia nervosa. In the second study, 369 women who attended a family planning clinic, completed a shortened version of the questionnaire used in the first study. Twenty-six percent reported ever having experienced an "episode of uncontrollable excessive eating," and 20.9% reported having such an episode during the previous two months. A total of 6.5% reported that they had used vomiting as a means of weight control, 4.9% used purgatives, and 7.3% used exercise. When the same conservative rules as used in the first study were applied, 1.9% of the respondents fulfilled diagnostic criteria for bulimia.

Finally, Johnson and associates (1983) reported on 509 self-selected women volunteers who were sufficiently distressed about their eating problems to write to the Anorexia Nervosa Project at Michael Reese Medical Center requesting information on bulimia. Seventy-one percent or 361 of the respondents met the DSM-III criteria for bulimia. Of these 361 women, 61.6% were of normal weight for their height, however 50% of the sample reported a history of being overweight. Approximately 50% of the sample were binge eating at least daily, and over two-thirds were relying upon laxatives for weight control. In addition to bulimic behaviors, 6.1% of the total sample carried a probable diagnosis of anorexia nervosa.

In summary, a review of the literature concerning binge eating and other bulimic tendencies has demonstrated that these disordered eating behaviors have become a serious health problem especially among adolescent and young adult females. Approximately 4% to 18% of the adolescent female populations reviewed displayed a history of bulimia, while 16% to 46% were shown to have engaged in binge eating episodes. A range of 4% to 13% for

bulimia and 43% to 67% for binge eating, was found among the young adult female populations. Among the subjects surveyed that did display bulimic behaviors, there were a number of similarities. It was found that dieting often preceded bulimia, the onset of bulimia was often during adolescence, and many of the bulimic subjects reported a history of being overweight.

Prevalence of Anorexia Nervosa

Longitudinal research has indicated that the incidence and prevalence of AN has increased over the last 20 to 30 years in industrialized nations. Crisp et al.(1976) reported on nine populations of English school girls during the 1972 to 1974 time period. They suggested that it was immediately clear that all the independent schools in the sample were very familiar with the problem of AN and often at a loss to know how to help their pupils afflicted with the disorder. Their results indicated that 1 in 200 girls under 16, and 1 in 100 between the ages of 16 and 18, were suffering from primary AN. In addition to the incidence of primary AN, they also emphasized that a number of girls interviewed reported going through times when their behavior in some ways resembled the condition of AN.

Jones and associates (1980) investigated the incidence of AN in Monroe County, New York during the 1960 to 1976 time period. Their results showed that there was a sharp increase in the number of females with the disorder, particularly those aged 15 to 24 years.

The epidemiology of AN in a defined region in Switzerland from 1956 to 1975 was investigated by Willi and Grossman (1983). Their data were derived from case histories of nearly all medical, pediatric, and psychiatric clinics in the region during three randomly selected sampling periods of 3 years each. It was found that the incidence of clinically diagnosed AN increased significantly from .38/100,000 (for 1956 - 1958) to .55/100,000 (for 1963 - 1965) and to 1.12/100,00 (for 1973 - 1975). In total, 65 females with AN were admitted for the first time to a medical center during the three sampling periods. The average age of onset of the disease was 16.9 years.

To investigate the prevalence of AN in selected populations, the Eating Attitudes Test or EAT (Garner & Garfinkel, 1979), has been used extensively in the literature. As outlined in the methodology chapter, the EAT is a self-report measure which was developed to assess a wide range of target behaviors and attitudes found in AN. The following, are a number of studies that used the original EAT-40 to investigate the prevalence of AN.

The original populations surveyed to develop the EAT-40 instrument (Garner & Garfinkel, 1979) included a criterion group of 32 female anorexia nervosa patients (AN) and 34 female normal control (NC) university students. The test was cross-validated by administering it to an additional sample of 33 AN patients and 59 NC subjects, as well as 49 male and 16 obese subjects. Results showed a significant difference between the AN group and all other groups. Only 7% of the NC results fell above the lowest AN score. A minimum cut-off score of 30 was established to eliminate false negatives for AN. This cut-off score also allowed for a "false positive" rate (identification of normal subjects with eating concerns comparable to those with AN) in only 13% of the NC group. Garner and Garfinkel (1978) also administered the EAT-40 to 112 professional dance students to determine if it would be useful in detecting cases of primary AN that had not been previously diagnosed. They found that of those students who scored greater than 30 on the EAT, clinical interviews revealed 6 cases (5%) of primary AN.

Garner and Garfinkel (1980) administered the EAT-40 to a total of 423 female subjects including: 183 ballet students, 56 fashion students, 35 music students, 81 normal control (NC) university students, and 68 patients with AN. The dance and model groups, who, by career choice, must focus increased attention and control over their body shapes, had significantly higher mean EAT scores than did the NC group. In the dance group, 69 subjects (38%) scored 30 or over on the EAT, with 19 (34%) of the modelling subjects and 11 (9%) of the NC and music students also scoring over 30. The subjects who scored over 30 on the EAT, were then clinically interviewed. None of the NC group met the criteria for AN, but 12 cases (6.5%) of the dance sample and 4 cases (7%) of the modelling sample were identified as having AN. It was suggested that the results from this study support the hypothesis that "the

pressure for thinness when augmented by high performance expectations is the ideal social medium for the expression of anorexia nervosa in vulnerable adolescents" (p. 653).

Button and Whitehouse (1981) administered the EAT-40 to 466 female and 132 male College of Technology students, and found that 28 female students (6.3% of the female sample) scored in the "anorexic" range. These 28 "high scorers" were then interviewed, and it was found that symptoms of AN were common among the group. These symptoms were however shown to vary widely, from "normal dieting" to one case of "true" AN. It was suggested that a high score on the EAT cannot be used to diagnose AN, but it is of value in detecting subclinical cases. Button and Whitehouse (1981) have stated "the EAT is more accurately viewed as a measure of concern about weight and food intake, rather than exclusively a measure of the symptoms of anorexia nervosa" (p. 514).

Thompsom and Schwartz (1982) compared three groups of women to investigate the relative impact of varying levels of anorexia on life adjustment of late adolescent women. The three groups included a primary anorexia nervosa group (N = 26), a normal weight "anorexic-like" group (N = 25), and a problem free normal group (N = 26). The anorexic-like group was comprised of college students who scored 25 or higher on the EAT-40 and whose weight was within 10% of the expected range for their height and age. The problem free normal group were those students who scored 10 or less on the EAT-40, and fit within the same weight-for-height-and -age standard as above. The mean EAT scores of the three groups were reported as 5.67 for the normal group, 36.36 for the anorexic-like group, and 56.8 for the anorexic group. It was concluded that a considerable amount of anorexic-like behavior exists among apparently normal-functioning college women. Fifty-two percent of the anorexic-like and 23% of the problem free subjects reported severe or moderate binge eating. Also, 52% of the anorexic-like group had used self-induced vomiting as a method of weight control, and 20% had used laxatives. Social adjustment and symptomatic distress were also measured within these groups, and it was found that the primary anorexia nervosa group was far more profoundly affected than the anorexic-like group.

Clarke and Palmer (1983) conducted a postal survey of 156 female and 120 male students attending the University of Liecester. Eighteen (11.5%) of the female respondents scored 30 or more on the EAT-40 measure. No male subjects scored above 30. Sixty-one percent of the females who scored in the "anorexic" range attended an interview. None of the respondents fulfilled diagnostic criteria for AN, but half showed eating disorder behaviors and attitudes of a clinical severity.

Carter and Moss (1985) administered the EAT-40 to 162 white females ranging in age from 18 to 39 years (mean age of 19 years). It was found that 21.6% of the subjects scored 30 or above. Only 2 of 56 selected subjects (4%) who underwent a structured interview could be classified as anorexic and an additional 4 subjects (7%) were classified as bulimic.

Many investigators have also used the EAT measure on selected adolescent populations. Lowe, Miles, and Richards (1985) administered the EAT-40 to 1514 New Zealand school girls, in the age range of 13 to 17 years. Their results showed that 14% of the subjects scored in the "anorexic" range of 30 or above.

Leichner, Arnett, Rallo, Srikameswaran, and Vulcano (1986) administered the EAT-40 to a total of 5150 Canadian students, aged 12 to 20, from 15 public schools and one university in the province of Manitoba. Overall, 5% of the males and 22% of the females scored in the "anorexic" range of the EAT-40. The mean EAT score for females was 23.54 and for males, 17.46. Also, a larger percentage of those who scored above 30 had positive weight deviations from the median as opposed to those who were below the weight median. It was therefore suggested that "high scores on the EAT, and any abnormal attitudes or eating patterns that such scores reflect, are not the specific domain of the underweight but in fact may be more prevalent among overweight females" (p.979).

A modified version of the EAT-40, which has also been used as an objective measure of the symptoms of anorexia nervosa, was developed by Garner, Olmsted, Bohr, and Garfinkel (1982). On the basis of a factor analysis of the original scale, a 26-item version of the EAT (EAT-26) was proposed. The EAT-40 was administered to 160 anorexia nervosa patients and 140 female university students. Three factors which related to dieting, bulimia

and food preoccupation, and oral control were thus formulated. Fourteen items were eliminated, leaving a new 26-item scale (EAT-26).

Mann and associates (1983) administered the EAT-26 to 262, 15 year-old South London school girls. It was found that 6.9% scored 21 or above, which had been established as the cut-off point for the EAT-26. The girls who scored in this "anorexic" range reported missing more meals during the day and that their weight was more unstable, as compared to their peers.

Wells, Coope, Gabb, and Pears (1985) examined the factors measured by the EAT in a sample of 749 teenage New Zealand schoolgirls between the ages of 12 to 18 years. The mean EAT-40 score was 12.1, with 4.5% of the girls scoring 30 or above. The EAT-26 was also administered to the subjects, and the mean score was 6.6. Their factor analysis of the EAT-40 yielded four factors: dieting, food preoccupation, vomiting/laxatives, and social pressure to eat. Their Factor I contained 12 of the 13 items of Garner et al. (1982) dieting factor, with the other subscales also being similar to those reported by Garner and associates.

Due to the recognition that AN is a multi-dimensional disorder, Garner, Olmstead, and Polivy (1983) developed a new measure called the Eating Disorder Inventory (EDI). It was felt that the EAT tended to be oriented only toward behavioral/symptom parameters of AN. The EDI, a 64-item, self-report, multiscale measure was thus designed, for the assessment of psychological and behavioral traits common in AN and bulimia. The EDI consists of eight subscales. The first three were designed to assess attitudes and/or behaviors related to eating and body shape. It was suggested that disturbances in these areas are central to anorexia nervosa but also may exist in other groups of dieters. The remaining five subscales (Ineffectiveness, Interpersonal Distrust, Interoceptive Awareness, Perfectionism and Maturity Fears) were designed to measure traits which have been "identified by clinical theorists as fundamental aspects of the psychopathology of anorexia nervosa" (Garner, et al., 1983, p. 29). Following are a number of studies that have utilized the EDI instrument.

Garner, Olmstead, Polivy, and Garfinkel (1984) administered the EDI to 237 female college students and 66 female ballet students. On the basis of their scores on the Drive for

Thinness subscale, the subjects were divided into a weight-preoccupied group (N=35) and a non weight-preoccupied group (N=134) (the mean score of 15 or above for anorexic patients on the Drive for Thinness Subscale has been established as the cut-off point for identifying non-clinical populations as weight preoccupied). Of the 35 weight-preoccupied women, 11 had elevated scores on all of the subscales, and 24 had elevated scores only on the Drive for Thinness, Body Dissatisfaction and Perfectionism subscales. The authors concluded that "although there are some highly weight-preoccupied females who display psychopathology quite similar to anorexia nervosa, others only superficially resemble patients suffering from serious eating disorders" (p. 265).

Williams, Schaefer, Shisslak, Gronwaldt, and Comerci (1986) investigated 72 female adolescents (mean age of 15.5 years) from Arizona, using the EAT and EDI measures, plus a clinical interview. Their results indicated that adolescent scores on the EAT and the EDI were similar to young adult women scores. There were 9 subjects (12%) who had a score of 30 or above on the EAT-40. Based upon interview information, 54 subjects were classified as normal, 9 as dieters, 8 as suspected bulimics, and 1 as bulimic. Interview results also indicated that of the 72 subjects, 25% were currently dieting, 60% regularly skipped meals, 35% said they were overweight or very overweight, 22% were binge eaters, 8% vomited after eating, and 4% used drugs to lose weight.

Lundholm and Littrell (1986) investigated the desire for thinness and its relationship to disordered eating and weight control behaviors, among a sample of 751 female high school cheerleaders (mean age of 15.9 years). The authors developed a Desire for Thinness Scale, and administered it, along with relevent scales from three eating disorder instruments to the subjects. The three instruments used included the Bulimia and Body Dissatisfaction Scale of the EDI, the EAT-40, and the Restrained Eating Scale (RES) (Stunkard, 1981). The results indicated that the more important the desire for thinness, the more likely the tendency toward problematic eating behaviors. The subjects who scored in the upper third on the desire for thinness scale were more likely to report excessive concern with dieting, caloric restriction, and weight. This group also demonstrated dissatisfaction with the size of parts of their body, and

episodes of uncontrollable over-eating often followed by the impulse to engage in self-induced vomiting.

Raciti and Norcross (1987) administered the EAT-40 and the EDI to 268 female college freshmen with a mean age of 18 years. Twelve percent of the women scored above 30 on the EAT, and 18% scored above 15 on the Drive for Thinness subscale of the EDI. Both groups were subsequently identified as weight preoccupied. The total EAT was highly correlated with the total EDI ($r=0.66$) and with the Drive for Thinness subscale ($r=0.79$). The results showed an 85% agreement between the EAT and the EDI in identifying women as not weight preoccupied, and a 5% agreement in women judged to be weight preoccupied.

In summary, the prevalence of disturbed eating behaviors and attitudes among adolescent and young adult women has been shown to vary depending upon the severity of the disorder. An approximate range of 5% to 22% of the "normal" samples reviewed, scored in the "anorexic" range on the EAT-40, EAT-26, and/or EDI measures. The mean age of onset for AN has been shown to range from 15 to 18.4 years. Also, populations that included high achievers and/or individuals who were under increased pressure to be thin (i.e. ballet dancers, models), were shown to be "high risk" populations for the development of anorexia nervosa.

III. METHODOLOGY

Subjects

Subjects for this research were 251 females aged 15 to 17 years, from Red Deer, Alberta, Canada. This included the total number of grade 10 female students enrolled in compulsory physical education 10 classes from the two schools which serve the city of Red Deer residents. Lindsay Thurber Comprehensive High School (LTCHS) is the public high school for the entire city of Red Deer. There were 180 females registered in P.E. 10 at LTCHS. Camille J. Lerouge Collegiate is the separate high school for the entire city of Red Deer, and had 71 females registered in P.E. 10.

A sample of 15 to 17 year olds was chosen because this age marks the onset of the phase of life in which anorexia nervosa seems most usually to have its conception (Dally, Gomez, & Isaacs, 1983; Jones, et al., 1980).

Instruments

1. Eating Attitudes Test (EAT)

This test was developed and validated to assess a broad range of target behaviours and attitudes found in anorexia nervosa (Garner & Garfinkel, 1979). The EAT is a self-report questionnaire that employs a forced-choice Likert scale ranging from 1 (never) to 6 (always) with a total possible score of 78. A score of 3 is earned for an extreme response in the "anorexic" direction, with adjacent alternatives given a score of 2 or 1. A high score on the EAT does not invariably reflect AN, nor does a low score invariably rule it out. However, in practice, the EAT has been shown to be quite accurate in differentiating anorexics from normal weight individuals (Garfinkel & Garner, 1982). It should be stressed, that the EAT was used as a general index of disturbed eating behaviors and attitudes, and not as a method of diagnosing anorexia nervosa. The diagnosis of AN remains a clinical one.

The EAT was originally a 40 item questionnaire, but has been abbreviated to 26 items (EAT-26) on the basis of a factor analysis of the original scale (Garner, Olmsted, Bohr, & Garfinkel, 1982). Factor I (Dieting), contains 13 items and reflects a pathological avoidance of fattening foods and a preoccupation with being thinner. Factor II (Bulimia and food preoccupation), contains 6 items and reflects thoughts about food as well as those indicating bulimia. Factor III (Oral Control), consists of 7 items and relates to self-control of eating and the perceived pressures from others to gain weight.

A score of 20-plus on the EAT-26 was used as a cut-off score taken to be indicative of anorexic traits and tendencies.

The EAT-26 has been shown to display acceptable criterion-related validity by significantly predicting group membership. The reliability (internal consistency) of the EAT-26 is high (alpha=0.90 for the AN group tested). The EAT-26 has also been shown to be highly predictive of the total EAT-40 (r=0.98). Factor I of the EAT-26 has the highest correlation with the total EAT-26 (r=0.93), with Factors II (r=0.64) and III (r=0.60), having weaker positive relationships to the EAT-26 total scale score.

2. Body Shape Questionnaire (BSQ)

The BSQ is a self-report instrument that was constructed to provide a means of investigating the role of concerns about body shape in the development, maintenance, and treatment of anorexia nervosa and bulimia (Cooper et al., 1987). It employs a one to six scoring method ("never"=1, "always"=6), with all questions referring to the subjects state over the previous four weeks. A final set of 34 questions were empirically derived by interviewing both patients with eating disorders and other women. The highest possible score for the BSQ equals 204.

The BSQ was validated by comparing the scores of a non-patient sample (n=535) to the scores of bulimia nervosa patients (n=38). The scores of the patients were significantly higher (mean=136.9, s.d. 22.5) than those of the non-patients (mean=81.5; s.d. 28.4); ($t=11.7$; $df=571$; $p<0.001$). Its concurrent validity was shown by the significant correlations between the BSQ and the total score on the EAT

and the Body Dissatisfaction subscale of the Eating Disorder Inventory (Garner, Olmstead, & Polivy, 1983).

Discriminant validity of the BSQ has also been shown to be satisfactory. Among a community sample of women, those who independently declared themselves as concerned about weight and shape had significantly higher BSQ scores (mean=109.0; s.d. 21.2) than the unconcerned group (mean=55.9; s.d. 14.4). Similarly, probable community "cases" of bulimia nervosa had mean scores of 129.3 (s.d. 17.0), which were significantly higher than the mean score of 71.9 (s.d. 23.6) for the "non-cases".

Cooper and his associates have suggested that the BSQ measures a psychological dimension (concern about body shape), that is known to vary considerably in intensity both within patient populations and within community samples. Therefore, they state "the BSQ should be regarded as providing a measure of the extent of psychopathology rather than a means of case detection" (Cooper et al., 1987, p. 490).

3. Eating Practices Inventory (EPI)

This questionnaire was designed to elicit straight-forward information on eating practices and weight associated behaviors and attitudes. The survey items obtained: (1) basic demographic data; (2) current weight and height, and perceived weight and height; (3) weight and dieting history; (4) preoccupation with weight, food, and eating; and (5) the frequency of certain eating behaviors, especially binge eating and behaviors used to control weight. The EPI was not designed for case finding.

The items on the EPI were derived from several sources all of which have been previously used in clinical and/or non-clinical settings. Many questions were developed based upon their ability to ascertain in detail, symptoms and behaviors mentioned in the DSM-III diagnosis of anorexia nervosa and bulimia. This was to assure that the questionnaire would assess those eating behaviours and attitudes toward food and eating that are clearly disordered.

The majority of the questionnaire employed an adaptation of the one used by Greenfeld and associates (1987). Additional items originated from other sources (Halmi,

1985; Milke, 1985; Stunkard & Messick, 1985).

The three separate questionnaires described above, were combined into one measuring instrument for the purpose of this study, and were administered to girls enrolled in compulsory physical education 10 from the two high schools in Red Deer, Alberta.

4. Height and Weight

Standing height and body weight were measured according to standards set by the *Canadian Standardized Test of Fitness Operations Manual* (1986). Height was recorded to the nearest 0.5 cm, using a metric wall tape and a set square. A balance beam scale was used to measure weight to the nearest 0.1 kg. A body mass index (BMI) was then calculated for each subject and their score was placed in a good health or health risk zone according to standards established for adolescent females by the *Canadian Standardized Test of Fitness Operations Manual* (Fitness and Amateur Sport: Government of Canada, 1986).

Procedure

The principals of Lindsay Thurber and Camille high schools, were approached, the nature of the study explained and their participation enlisted. The administration of the questionnaire took place in a classroom setting during a compulsory grade ten, 80 minute, physical education class. It was emphasized that the research was being conducted independently of the school and teachers, and that filling out the questionnaire would not affect whatever grade the student might be assigned in the class.

The nature of the study was explained and the students were assured that they would not be asked to participate in the study in any other way. Directions regarding response format were explained to the students, with emphasis placed upon their request for assistance if they needed clarification on anything pertaining to the questionnaire. Students were instructed not to identify themselves by name or in any other manner, and were insured that their responses would be anonymous and confidential. The subjects were instructed to

complete the questionnaire without discussing their answers among themselves, and the importance of responding honestly was stressed.

The subjects were also informed that while they were completing the questionnaire, members of the research team would be calling them to the back of the classroom to be measured for height and weight. This was set up so as not to disturb the students who were completing the questionnaire, while at the same time providing privacy to the subject being measured.

Upon completion of the questionnaire, the student participants were provided with general information concerning disordered eating and weight control behaviors and attitudes. The students were then given a chance to ask questions and to discuss anything pertaining to the topic. They were also told that they would be able to obtain the group results from the researcher after the data had been analysed. Finally, any students who felt they needed help with an eating disorder, were given guidance as to how to obtain such assistance.

Those students who were absent on the day of the testing, completed the questionnaires in the next physical education class that they attended, under the supervision of their teacher.

IV. RESULTS AND DISCUSSION

The Study Sample

Data were obtained from 251 grade 10 female adolescents, who resided in an urban community in Central Alberta. Their ages ranged from 15 to 17 years, with a mean age of 15.7 years. The mean weight of the study sample was 57.5 kg (s.d. 9.00) and the mean height was 164.1 cm (s.d. 6.12).

The Eating Attitudes Test (EAT-26)

The mean EAT-26 score of this sample was 10.04 (s.d. 8.89). The scores ranged from 0.00 to 48.00. Using a cut-off point of $\geq$ 20, 17.5% (n=44) of the subjects gave a positive response to the EAT-26 instrument. A further 6.8% (n=17) scored in the borderline 15 to 19 range on the EAT-26. Three quarters or 75.7% (n=190) of the subjects scored 14 or less. Based on the cut-off point of $\geq$ 20, an "anorexic-like" (A-L) problem group of 44 subjects (17.5%) and a problem free "normal" group of 207 subjects (82.5%) were established.

These findings were similar (although somewhat elevated) to those found among other adolescent school girl samples surveyed using the EAT-26 scale. A sample of 262, 15 year-old females investigated by Mann and associates (1983), had a mean EAT-26 score of 9.6 (s.d. 6.4), with 6.9% scoring above the cut-off point of $\geq$ 20. Wells et al.(1985) reported a mean score of 6.6 for a sample of 749 females aged 12 to 18 years. They also found that 4.5% of their sample scored above the established cut-off point of $\geq$ 30 on the EAT-40 scale. Gibbs (1986) administered the EAT-26 to 136 females ranging in age from 15 to 18 years, and found a mean score of 13.36 (s.d. 11.49), with 12% of the sample scoring $\geq$ 20. Grant and Fodor (1986) reported a mean EAT-26 score of 8.54 (s.d. 6.77), using a sample of 113 females aged 15 to 18. Finally, Williams and co-workers surveyed 72 females with a mean age of 15 years, and classified 54 of the subjects as normal. The mean EAT-26 score for these 54 subjects was 10.7 (s.d. 6.6) and the mean EAT-40 score was 17.6 (s.d. 8.3).

A number of studies that used the EAT-40 scale (which correlates highly with the EAT-26 scale; r=0.98) have also found similar positive response rates among adolescent subjects. Moss and associates (1984) surveyed 151 tenth grade girls and found that 11.9% of the sample scored ≥ 30 on the EAT-40 scale. Lowe and co-workers (1985) administered the EAT-40 to 1514 New Zealand school girls aged 13 to 17, and found that 14% scored ≥ 30. Leichner et al.(1986) surveyed 2247 male and 2404 female students aged 12 to 20 years, and found that 5.7% of the males and 22.3% of the females scored ≥ 30 on the EAT-40 scale. Table 1 summarizes the prevalence rate of positive Eating Attitudes Test scores among various adolescent female samples and allows for comparison of similarity between studies.

The significant amount of "anorexic-like" behaviors and attitudes found among the subjects in the present study (17.5%) was somewhat high relative to results found in other studies that examined adolescent female samples. Perhaps this is in part due to the secular increase in the promotion of a thinner ideal female figure by the mass media and fashion industry. This hypothesis is supported when one reviews the results of previous research that employed the identical testing instrument (EAT - 26) in 1983 (Mann et al.) and 1986 (Gibbs), where a trend towards increased "anorexic-like" behaviors was reported.

A crucial distinction must be made however, between displaying eating disordered "behavior", and having a clinical eating "disorder". The author is not suggesting that a positive response to the EAT allows for a clinical diagnosis of anorexia nervosa (AN), but rather demonstrates that abnormal eating attitudes and behaviors are quite prevalent (in various degrees of severity) among adolescent females.

Past research has demonstrated that there may be a "subclinical" classification of eating disorders. Button and Whitehouse (1981) have suggested that the EAT could be "more accurately viewed as a measure of concern about weight and food intake, rather than exclusively a measure of the symtoms of anorexia nervosa" (p. 541). They further concluded in their study of 466 female college students in Great Britain, that 5% of their sample had developed a "subclinical" form of AN. Nylander (1971) has also suggested that AN may be expressed in "mild" or "incipient" forms, and concluded that 10% of the 1241 female

teenagers he investigated had an incipient form of the disorder.

The high positive response rate (17.5%) to the EAT-26 scale found in this study could be viewed as an indication that concern about weight and food intake among adolescent females is becoming a serious public health problem.

TABLE 1. Prevalence of positive Eating Attitude Test scores among adolescent female samples.

Study	Sample Size	Scale	Criterion	Prevalence
Mann et al. (1983)	263	EAT-26	$\geq$ 20	6.9%
Moss et al. (1984)	151	EAT-40	$\geq$ 30	11.9%
Lowe et al. (1985)	1514	EAT-40	$\geq$ 30	14.0%
Wells et al. (1985)	749	EAT-40	$\geq$ 30	4.5%
Gibbs (1986)	136	EAT-26	$\geq$ 20	12.0%
Leichner (1986)	2404	EAT-40	$\geq$ 30	22.3%
Present Study	251	EAT-26	$\geq$ 20	17.5%

Separate mean EAT-26 scores for the A-L problem group (n=44) and the problem free normal group (n=207) were also calculated. The mean EAT-26 score of the A-L group was 25.95 (s.d. 6.00), which was shown to be significantly different from the problem free normal group mean of 6.66 (s.d. 6.00) ($t=23.20$; $df=249$; $p<0.001$).The significant difference between these two group means indicated that the A-L group displayed a considerably higher percentage of abnormal eating attitudes and behaviors as compared to the normal group.

In the original study by Garner and associates (1982), mean EAT-26 scores of 36.1 (s.d. 17.0) for 160 AN patients, and 9.9 (s.d. 9.2) for 140 female controls were found. The mean of this study's A-L group (25.95) was not as high as the clinically diagnosed anorexia nervosa patient's mean (36.1), but it was considerably higher than the female control group mean (9.9) found in the original sample. This again demonstrates that many anorexic-like behaviors and attitudes were found among this "normal" adolescent female sample, even though no clinical diagnosis of anorexia nervosa was made.

The Body Shape Questionnaire (BSQ)

The mean BSQ score for the study sample was 97.74 (s.d. 36.82), with a minimum score of 34.0 and a maximum score of 189.0. The correlation coefficient between the total EAT and the total BSQ scores was .5454 ($p<0.001$). The mean BSQ score for the A-L problem group was 141.2 (s.d. 28.8), while the mean BSQ score for the normal Eating Attitudes Test group was 88.5 (s.d. 31.4). These means were shown to be significantly different ($t=10.27$; $df=249$; $p<0.001$).

The BSQ developed by Cooper and associates (1987), measures concerns about body shape. In the original study, Cooper et al.(1987) found a mean BSQ score of 81.5 (s.d. 28.4) for a sample of women which included 204 university students and 331 family planning clinic attenders. They then identified a group of 95 subjects who independently declared themselves as concerned about weight and shape and 79 subjects who were identified as unconcerned about weight and shape. The criterion for membership into the "concerned" group included

those who rated slimness and the fear of fatness as "moderately" or "extremely" important; and were currently dieting to lose weight. The "unconcerned" group rated slimness and the fear of fatness as "not at all" or "slightly" important; and were not currently dieting. The "concerned" group had a mean BSQ score of 109 (s.d. 21.2) while the "unconcerned" group mean was 55.9 (s.d. 14.4).

The mean BSQ score of 97.74 found in the present study sample was considerably higher than the previously found means of the "unconcerned" group (55.9) and the entire community sample (81.5). In addition, the mean BSQ score of 141.2 for the A-L group identified in the present study was higher than that reported by Cooper and associates (1987) for a sample of 38 bulimia patients (136.9). The mean BSQ values found in this study, both for the entire sample and for the A-L group alone, seem to indicate that concerns about body shape among adolescent females are indeed becoming a health problem that must be dealt with.

Weight Related Data

A. Concerns About Feeling Fat

The survey results demonstrated an overall pervasiveness of the "feeling" of being fat. The following items (summarized in Table 2) were examined separately to gain an estimate of the prevalence of these types of weight related behaviors and attitudes. The majority of the 251 female adolescent subjects (71.3%) who participated in the study gave an affirmative response to the question, "Do you often feel fat?". An answer of "often, very often, or always" was given by 56.5% of the subjects when asked, "How often do you worry about being or becoming overweight?". Approximately 45% indicated that they were "often, very often, or always" terrified of being overweight. Forty-four percent of the subjects indicated that they were "often to always" preoccupied with a desire to be thinner, and 41.4% were "often to always" preoccupied with the thought of having fat on their body. Finally, 62.9% gave an "often, very often, or always" response to the question, "Have you been afraid that you might become fat (or fatter)?".

The prevalence of concern over feeling fat found in the present study was consistent with results of various other female samples that have been investigated. Huenemann and co-workers (1966) reported that a large number of American school girls described themselves as "fat", the numbers increasing from 43% at grade 9, to 56% at grade 12. Nylander (1971) investigated 1129 male and 1241 female Swedish school children, and found that most girls had at some time felt they were fat, the frequency increasing progressively from 50% at age 14, to approximately 70% at age 18.

The survey of 151 tenth grade American girls conducted by Moss and associates (1984) also yielded very similar results to the present study. They reported that 43.1% of their sample, were often, very often, or always "terrified of being overweight", 39.1% were "preoccupied with a desire to be thinner", and 35.1% were "preoccupied with the thought of having fat on their body". Greenfeld et al.(1987) found that 81.4% of the 337 adolescent female students from England they surveyed, reported "often feeling fat". Finally, the postal survey of 33,000 women conducted by Glamour Magazine (Wooley & Wooley 1984a), found that 75% of the respondents felt they were "too fat" and 41% were either "moderately unhappy or very unhappy" with their bodies. An analysis of the present study results (in conjunction with previous findings of the related literature), has highlighted just how prevalent concerns about feeling fat are becoming among females of contemporary Western societies.

In relation to these data describing the feeling of being fat, a number of subjects indicated that they had concerns about weight and eating that were of a serious nature. Sixty-four subjects (25.5%) reported that they were concerned they might have an eating disorder. In addition, 25 subjects (10%) reported having seen a doctor for an eating or weight related problem. These results were very similar to those reported by Greenfeld et al.(1987). Their investigation of 337 females aged 13 to 19 years, indicated that 28.1% were concerned they might have an eating disorder, and 13.6% had seen a doctor for an eating or weight related problem.

TABLE 2. Percentages of often, very often, or always responses to selected questions dealing with concern about feeling fat.

Selected Questions	%	(n)
Worried about being or becoming overweight	56.5	(142)
Terrified of being overweight	45.4	(114)
Preoccupied with a desire to be thinner	44.2	(111)
Preoccupied with the thought of having fat on one's body	41.4	(104)
Afraid of becoming fat (or fatter)	62.9	(158)

B. Comparison of Weight Opinion to Measured Weight and Height

Weight and height measurements were taken by the researcher, and a body mass index (BMI) score was calculated for each subject. Each score was then placed in an above or below average health risk zone or a good health zone according to standards established for adolescent females by the *Canadian Standardized Test of Fitness Operation Manual* (Fitness and Amateur Sport: Government of Canada, 1986).

Weight opinion data showed that over half (57.4%) of the subjects felt they were overweight or very overweight. Thirty-six percent felt they were of average weight, and 6.3% felt underweight. When these values were compared to body mass index (BMI) results, it seemed apparent that the feeling of being overweight was much more prevalent than the actual condition. Table 3 demonstrates the breakdown of subjects into a "good health" group and two "health risk" groups, as they compare to the weight opinion categories. According to the BMI results, 68.9% (n=173) of the subjects fell within the good health category but only 36.3% (n=91) considered themselves of average weight. The above average health risk group contained only 10.8% (n=27) of the sample, while 57.4% (n=144) considered themselves overweight or very overweight. Conversely, while only 6.3% (n=16) considered themselves underweight, 20.3% (n=51) of the subjects fell in the below average health risk group.

TABLE 3. Weight opinion and BMI results for total sample.

Weight Opinion	%	(n)	%	(n)	BMI Zone
Underweight	6.3	(16)	20.3	(51)	Below Avg. Risk Zone
Average	36.3	(91)	68.9	(173)	Good Health Zone
Overweight or Very Overweight	57.4	(144)	10.8	(27)	Above Avg. Risk Zone

Crosstabulations between the BMI groups and selected questions (Table 4) were also conducted to establish the frequency of certain weight related behaviors and attitudes as they compare to the established good health and health risk groups. Results showed that 63% (n=109) of the subjects that fell in the good health BMI group felt they were overweight or very overweight. In addition, 21.6% (n=11) of the below average health risk group felt overweight, 51.0% (n=26) felt they were of average weight, and only 27.5% (n=14) felt they were actually underweight.

Again, these results are consistent with other studies that investigated adolescent female samples. Eisele and associates (1986) surveyed 385 females aged 12 to 14 and found that while 81% of the subjects were within the range for ideal weight or were underweight, 78% preferred to weigh less. Greenfeld et al.(1987) found that of the 337 females they investigated, 46.9% described themselves as overweight but only 12.3% were actually overweight. Finally, Kaplan and co-workers (1988) surveyed 211 females and 133 males aged 11 to 18 years and found that females were more likely than males to see themselves as overweight, and if actually underweight, to see themselves as normal or even overweight.

In addition to the above studies that surveyed adolescent female subjects, similar results have been found among adult female samples. Halmi and co-workers (1981) investigated 208 females with a mean age of 25.6 years and found that 41.8% felt they were overweight or very overweight, while only 12.1% were classified as over or very overweight according to height/weight norms. Johnson and associates (1983) surveyed 361 women (mean age 23.7 years) who were concerned that they may have an eating disorder and found that 61.6% were of normal weight for their height, while 50% of the sample reported a history of being overweight. Only 17.5% of the sample were currently overweight. Finally, Cooper et al.(1984) found that 86% of a sample of 364 women (mean age 24.1 years) weighed within the normal range for their height and age. Despite this fact, 39% perceived themselves as considerably over the appropriate weight for their age and height; and 60% reported that they persistently felt fat.

TABLE 4. Comparison between weight opinion and BMI zones.

Weight Opinion	BMI Zone					
	Below Avg. Risk Zone		Good Health Zone		Above Avg. Risk Zone	
	%	(n)	%	(n)	%	(n)
Underweight	27.5	(14)	1.2	(2)		
Average	51.0	(26)	35.8	(62)	11.1	(3)
Overweight	21.6	(11)	60.1	(104)	74.1	(20)
Very Overweight			2.9	(5)	14.8	(4)
Column Totals	20.3	(51)	68.9	(173)	10.8	(27)

In summary, it seems evident that many females perceive themselves to be overweight, when in fact they are not. Also, a number of females who are actually underweight perceive themselves as normal or even overweight. These types of weight perceptions support the hypothesis of a shift towards a thinner ideal body shape for females.

Most of the past studies concerning abnormal eating attitudes and behaviors have categorized subjects into weight groups according to weight for height and age norms. However, recent research has shown that weight for height and age norms are less valid than BMI measurements. The most valid estimation of body composition would involve skinfold and girth measurements, along with body height and weight (Fitness and Amateur Sport: Government of Canada, 1986). Due to the nature of this study, measurements of this kind were not possible. It was felt that these kinds of extensive anthropometric measurements would have negatively affected the questionnaire responses. Since the collection of survey data was the main purpose of this research, every attempt had to be made to try to ensure the reliability of the responses. Thus, only measurements of body weight and height were taken and these were converted into a body mass index (BMI) score for each individual.

Dietz, Bandini, Schoeller, and Gortmaker (1986) investigated the validity of anthropometric measurement with both normal and obese adolescents and concluded that, "use of the BMI appears the most pragmatic approach to the assessment of adiposity in populations" (p.13). Their results also indicated that weight for height and age measurements had consistently lower correlation coefficients with percentage ideal body weight determined from total body water, than BMI measurements. Additionally, height/weight tables have been criticized in recent years because they do not make allowances for differences in body composition, nor are they necessarily representative of the general population. Also, the height/weight values used in the construction of many tables were usually reported rather than being measured precisely. For these reasons, plus the fact that BMI "good health" and "health risk" zones have been adjusted to better suit adolescent samples (Fitness and Amatuer Sport, 1986), the present study utilized BMI values as an objective indicator of actual body measurements as they compare to subjective opinions of weight.

In addition to comparisons between BMI values and subjective weight opinions, crosstabulations between BMI results and selected questions were analysed. The question concerning the subjects' frequency of worry about being overweight, revealed that responses of "often, very often, or always" were given by 60.7% of the good health group plus 31.3% of the below average health risk group. The crosstabulation between the BMI and the amount of weight the subject wanted to lose, indicated that 59.0% of the good health group still wanted to lose 6 to 20 pounds. Twenty-nine percent of the below average health risk group reported wanting to lose an additional 1 to 10 pounds.

Again, these results demonstrated that the majority of the female subjects in this sample who were in the good health range, were still worried about being overweight, and felt they needed to lose weight. Perhaps even more alarming was the finding that approximately one third of the 51 subjects who scored in the below average health risk zone were also worried about being overweight, and reported a desire to lose an additional 1 to 10 pounds.

C. Calorie Restriction Behaviors and Attitudes

The frequency of calorie restriction type behaviors, as reflected by selected questions from the Eating Practices Inventory (EPI) are outlined in Table 5. Twenty-eight percent (n=71) of all subjects reported dieting several days a month or more, and 31.1% (n=78) reported that they weighed themselves once every week or more. Forty-six percent (117) indicated that they skipped meals 2 to 6 times per week or more. Fasting behaviors of once every week or more were reported by 12.8% (n=32) of the subjects. Exercise once a day or more to burn calories was reported by 21.9% (n=55) of the subjects. When subjects were asked to describe their eating behavior, 42.3% (n=106) reported that they "often or usually" limit food intake. Also, 41.9% (n=105) of the subjects indicated that they would "probably or definitely" take a weight-control course if it was offered in their school's curriculum.

This apparent pervasiveness of calorie restriction behaviors and attitudes was also consistent with past findings. Nylander (1971) reported that 10% of the 14 year-old, and 40% of the 18 year-old girls in his study had tried to diet. Greenfeld (1987) reported that of the 337 females they surveyed, 43.6% employed crash diets, 39.7% often fasted more than one full

TABLE 5. Calorie restriction behaviors and attitudes for the total sample.

Behaviors and Attitudes	%	(n)
Diet several days a month or more	28.3	(71)
Weigh self one or more times weekly	31.1	(78)
Skip meals 2 to 6 times or more per week	46.6	(117)
Fast one or more times weekly	12.8	(32)
Exercise to burn calories one or more times daily	21.9	(55)
Often or usually limit food intake	42.3	(106)
Would probably or definitely take a weight-control course	41.9	(105)

day, and 13.6% weighed themselves one or more times daily. The Nielson survey (1979) demonstrated that 56% of all women 24 to 54 years reported that they diet.

One of the most interesting findings of this study concerning calorie restriction behaviors and attitudes was that 41.9% indicated they would probably or definitely take a weight-control course if it was offered in their school's curriculum. This attitude indicates the degree of concern and possibly preoccupation with weight and appearance that this sample of adolescent girls possessed.

Characteristics of the Anorexic-like and Normal EAT Groups

As well as yielding data on the sample as a whole, this study also aimed to describe the characteristics of those scoring above the cut-off point established for the EAT-26. This allowed for a more precise investigation into a group of "normal" adolescent females from a general sample, who scored in the "anorexic-like" range as measured by the Eating Attitudes Test.

As previously indicated, 17.5% (n=44) of the subjects scored in the anorexic-like (A-L) range of the EAT-26. The A-L group had a mean weight of 59.23 kg (s.d. 9.89) and the normal group had a mean weight of 57.19 kg (s.d. 8.79). These mean weights were not shown to be significantly different ($t=1.36$; $df=249$; $p>0.05$). Also, the A-L EAT group had a mean BSQ score of 141.2 (range 55 to 189), while the normal EAT group had a mean BSQ score of 88.5 (range 34 to 168). These mean BSQ scores were shown to be significantly different at a probability level of <0.001 ($t=10.27$; $df=249$). Only two subjects from the A-L group had a score of less than 97 on the BSQ. The significant difference between the mean BSQ scores for the A-L group as compared to the normal group, indicates that concerns over body shape and appearance were much more prevalent among the eating problem group.

Certain items of the BSQ were examined separately to gain an estimate of the prevalence of concern about body shape of the A-L group as compared to the normal group. A comparison between the A-L group and the normal group who gave a response of "very often or always" on selected BSQ questions is summarized in Table 6. Results of the total

sample were also included to allow for a comparison between the separate groups with the combined group. Eighty-six percent of the A-L group, as opposed to 23.2% of the normal group, reported that they "often or always" were so worried about their shape that they felt they ought to diet. Eighty-eight percent of the A-L group and 33.4% of the normal group reported that they were afraid they might become fat (or fatter). These results demonstrated that a much higher percentage of the A-L group perceived themselves as overweight as compared to the normal group. When asked, "Has feeling full made you feel fat?", 90.9% of the A-L group responded "very often or always", while only 26.5% of the normal group gave these same answers. Also, 54.5% of the A-L group reported eating even a small amount of food made them very often or always feel fat, while only 7.4% of the normal group gave the same response. The responses to these questions indicated that the A-L group had a much higher percentage of abnormal attitudes towards food and eating. Over half of the A-L group indicated that eating even a small amount of food made them feel fat. Surely this type of an attitude demonstrates a preoccupation with food and eating.

A number of BSQ questions also indicated a greater dissatisfaction with body shape of the A-L group. Sixty-three percent of the A-L group reported "very often or always" feeling fat when naked and 52.3% reported avoiding certain clothes which made them particularly aware of the shape of their body. Only 15% of the normal group reported an answer of "very often or always" to these same two questions. Seventy-two percent of the A-L group as compared to 26% of the normal group, reported "very often or always" imagining cutting off fleshy areas of their bodies. In answer to the question, "Have you felt ashamed of your body?", 65.9% of the A-L group as compared to 22.2% of the normal group, gave a "very often or always" response. Sixty-eight percent of the A-L group as compared to 22.8% of the normal group gave a "very often or always" response to the question, "Has seeing your reflection made you feel bad about your shape?". Fifty-two percent of the A-L group as compared to only 11.1% of the normal group answered "very often or always" to the question, "Have you been particularly self-conscious about your shape when in the company of other people?". Finally, 61.4% of the A-L group and 21.7% of the normal group "very

TABLE 6. Percentages of very often or always responses on selected BSQ questions according to EAT score groupings.

Selected BSQ Questions	EAT Group					
	A-L		Normal		Combined	
	%	(n)	%	(n)	%	(n)
Believe ought to diet	86.4	(38)	23.3	(48)	34.2	(86)
Afraid of becoming fat	88.6	(39)	33.4	(69)	43.0	(108)
Has feeling full made you feel fat	90.9	(40)	26.5	(55)	37.8	(95)
Has eating even a small amount made you feel fat	54.5	(24)	7.4	(16)	15.9	(40)
Feel fat when naked	63.6	(28)	15.4	(32)	23.9	(60)
Avoid certain clothes	52.3	(23)	15.4	(32)	22.0	(55)
Imagine cutting off fat	72.8	(32)	26.0	(54)	34.3	(86)
Felt ashamed of body	65.9	(29)	22.2	(46)	29.9	(75)
Has your reflection made you feel bad	68.2	(30)	22.8	(47)	30.7	(77)
Self-conscious about shape	52.3	(23)	11.1	(23)	18.4	(46)
Think lack self-control	61.4	(27)	21.7	(45)	28.7	(72)

often or always" thought that their shape resulted from a lack of self-control.

Again, it seemed evident by the differences in answers between the A-L and normal groups, that the eating problem group displayed many more concerns about their body shape and were much more self-conscious about their appearance. An examination of the selected BSQ questions outlined in Table 6 enables the reader to identify some of the specific attitudes and behaviors that were most prevalent among the A-L problem group.

Selected questions from the EPI were also examined separately to compare the A-L and normal EAT group responses. Nintey-three percent of the A-L group as opposed to 66.7% of the normal group answered yes to the question, "Do you often feel fat?". On the related question, "How often do you worry about being or becoming overweight?", 95.5% of the A-L group and only 25.2% of the normal group, answered "very often or always". These responses indicated that nearly all of the A-L problem group felt that they were fat, and were constantly preoccupied with worries about becoming overweight.

Self-reported weight opinions and BMI results also displayed some differences between the A-L and normal EAT groups. Refer to Table 7 for a summary of these results. Approximately eighty percent of the A-L group felt overweight or very overweight, but only 13.6% of these subjects were actually in the above average health risk zone. Of the normal group, 52.6% placed themselves in the overweight or very overweight categories, while only 10.1% actually fell in the above average health risk zone of the BMI.

As was previously suggested, the comparison between subjective weight opinion and BMI value, indicates that a much higher percentage of this adolescent female sample perceived themselves as overweight than were actually measured as being overweight. This difference was even more apparent in the A-L group as opposed to the normal group. Approximately eight percent of the normal group and none of the A-L group rated themselves as underweight, but 21.7% of the normal group, and 13.6% of the A-L group scored in the below average health risk zone of the BMI.

Due to the evidence that has suggested a shift towards a thinner "ideal" shape for females, it was expected that only a very small percentage of this sample would rate

TABLE 7. Weight opinion and BMI according to EAT score.

ANOREXIC-LIKE EAT GROUP					
Weight Opinion	%	(n)	BMI Zone	%	(n)
Underweight			Below Average Risk Zone	13.6	(6)
Average	20.5	(9)	Good Health Zone	72.8	(32)
Overweight or Very Overweight	79.5	(35)	Above Average Risk Zone	13.6	(6)
NORMAL EAT GROUP					
Weight Opinion	%	(n)	BMI Zone	%	(n)
Underweight	7.7	(16)	Below Average Risk Zone	21.7	(45)
Average	39.7	(82)	Good Health Zone	68.2	(141)
Overweight or Very Overweight	52.6	(109)	Above Average Risk Zone	10.1	(21)

themselves as underweight. It was also expected, that none of the anorexic-like group would perceive themselves as underweight because a distorted weight perception is typically displayed by anorexic individuals. Finally, of the 44 subjects who scored ≥ 20, and therefore became a member of the A-L group, there were an equal percentage (13.6%, n=16) who scored in the below average BMI zone and the above average BMI zone. The remainder, approximately three-quarters (72,8%, n=32), scored in the good health range of the BMI. These findings suggest that high scores on the EAT, and any abnormal attitudes or behaviors towards food or eating that such scores reflect, are not only found among the underweight, but may be more prevalent among average or overweight females. Leichner and associates (1986), found similar results among their sample of 2404 females aged 12 to 20 years. They reported that approximately 30% of their positive response EAT group were above the median weight for height and age.

The A-L group also appeared to display more of a weight fluctuation as compared to the normal group. The differences between reported most and least weights during the past year, were calculated for each subject, and these weight differences were subdivided into five pound categories. A higher percentage of the normal group (63.3%) as compared to the A-L group (42.9%) had weight fluctuations of only 1 to 10 pounds. Conversely, 56.1% of the A-L group as opposed to 31.9% of the normal group reported weight fluctuations of 11 or more pounds, perhaps indicating that those belonging to the A-L group were less likely to maintain a stable weight, and were more likely to go through frequent periods of weight loss and subsequent weight gain.

A number of the EPI questions also demonstrated a relationship between a high EAT score and the frequency of abnormal eating patterns and attitudes. Sixty-eight percent of the A-L group, as compared to only 19.7% of the normal group, reported that they dieted several days a month or more. Forty-three percent of the A-L group compared to 28.5% of the normal group reported that they weighed themselves once every week or more. Reported percentages for skipping meals 2 to 6 times every week or more was 79.5% for the A-L group, as compared to 39.6% for the normal group. Fasting behavior 2 to 6 times every week or

more was reported by 24.9% of the A-L group, but only 2.5% of the normal group. When asked to describe their eating behavior, 68.2% of the A-L group as opposed to 36.7% of the normal group, reported that they "often or usually" limit food intake. Also, 56.9% of the A-L group as compared to 38.7% of the normal group indicated that they "probably or definitely" would take a weight-control course if it were offered in their school. These findings indicated that the A-L group more frequently engaged in calorie restriction and weight loss types of behaviors than the normal group.

Symptoms of Bulimic Behaviors

Bulimic behaviors and attitudes were reported by a relatively small percentage of the sample, but some distinct differences between the A-L and normal EAT groups were evident. The majority of the entire sample (79.3%; n=199) reported never having vomited after eating. Fourteen percent (n=35) of all subjects reported vomiting less than once or 1 to 3 times every four weeks. None of the normal EAT group members, but 15.9% (n=7) of the A-L group, reported having vomited after eating once every week or 2 to 6 times every week.

Table 8 gives the frequencies of affirmative responses to selected questions by the total subject sample and by the A-L and normal EAT groups. Approximately twenty-two percent of the total sample considered themselves a binge eater, 62.9% reported ever having had a binge episode, 17.1% reported uncontrolled eating urges, and 24.3% reported times when they were afraid they could not stop eating. The A-L group reported a 15% to 25% greater frequency of affirmative responses to the above questions as compared to the normal group. Sixteen percent (n=40) of all subjects reported binge eating once every week or more. Of these 16%, 12 subjects (27.3%) belonged to the A-L group, and 28 subjects (13.5%) scored in the normal range of the EAT. Laxative use as a method of weight control, was reported by only a very small percentage (2.4%; n=6) of the total sample. Two subjects reported use of laxatives less than once every 4 weeks and an additional two subjects reported use 1 to 3 times every 4 weeks. One subject reported using laxatives 2 to 6 times every week, and one subject reported use once every day. A somewhat higher percentage (11.2%; n=28) of the total

TABLE 8. Percentages of affirmative responses on selected questions describing symptoms of bulimia according to EAT score group.

Symptoms of Bulimia	EAT GROUP					
	A-L		Normal		Combined	
	%	(n)	%	(n)	%	(n)
Binge eater	34.1	(15)	19.3	(40)	21.9	(55)
Binge episode	75.0	(33)	60.4	(125)	62.9	(158)
Uncontrolled eating urge	38.1	(17)	12.6	(26)	17.1	(43)
Afraid cannot stop eating	43.2	(19)	20.3	(42)	24.3	(61)
Binge eat one or more times weekly	27.3	(12)	13.5	(28)	16.0	(40)
Laxative use	6.8	(3)	1.9	(3)	2.4	(6)
Self-induced vomiting	34.1	(15)	6.3	(13)	11.2	(28)

sample reported having ever used self-induced vomiting as a method of weight control. Twenty-two subjects (8.8%) reported a frequency of less than once every 4 weeks, or 1 to 3 times every 4 weeks. Six subjects (2.4%), all belonging to the A-L EAT group, reported engaging in self-induced vomiting once every week or 2 to 6 times every week.

These findings are again similar to those found in past research. Crowther and associates (1985) surveyed 363 adolescent girls and found that 46% of the subjects reported episodes of binge eating, 11.2% had used self-induced vomiting as a method of weight control, and 4.7% had used laxatives. Hendren et al.(1986) investigated 592 adolescent females and found that laxative use was reported by 2.3%, and self-induced vomiting by 9.0%. Greenfeld and co-workers (1987) surveyed 337 females aged 13 to 19 years, and found that 44.6% reported serious binge eating behaviors (eg. "uncontrollable urges to eat and eat until they felt physically ill"). They also reported self-induced vomiting one or more times weekly by 11.6% of the sample, and laxative use to control weight by 5.7%.

Similar results have also been found among young adult female samples. Hawkins and Clement (1980) surveyed 185 female college undergraduates, and found that 79% reported binge eating occurences and one-third of the sample reported binging at least once per week. Halmi et al.(1981) surveyed 355 male and female summer session college students and their results indicated that 13% (87% female and 13% male) of the sample experienced all of the major symptoms of bulimia as outlined in the DSM-III diagnostic criteria. Purging behavior, defined as self-induced vomiting or laxative use, was reported by approximately 10% of the respondents.

Even though a relatively small percentage of this sample reported bulimic-like behaviors, the presence of any of these types of behaviors indicates that some adolescent females are sufficiently concerned about their weight and appearance that they are no longer willing to wait for a safe scientific method of weight-control.

V. CONCLUSIONS

The contemporary Western society places a high value on physical appearance and this is especially true for the female. In addition, society equates attractiveness with thinness in women, and has promoted the "slim physique" as a symbol of female beauty and success. Due to these cultural standards, weight has become a status symbol for women. Rodin and associates (1984) state, "for many women, weight is a quick and concrete barometer by which to measure oneself and one's worth - how well one is doing as a women" (p.290). This svelte female ideal surely serves to seriously challenge any female who is at all overweight and also many of those who are of an average weight for their height and age. Not only is there much evidence that female biological development tends to increase percent body fat (Rodin et al., 1984), but assuming that body type is normally distributed, only a small percentage of women can naturally fit into society's thin ideal. Thus, the "thinness equals attractiveness" premise has forced the female into trying to achieve a body build which is not equal to the "natural" female figure. Since the female "ideal" is far thinner than the "natural" female figure, women have been forced into participating in unhealthy practices in order to achieve this current thinner ideal.

A review of the literature suggests that over the last several decades, the cultural shift in the aesthetic ideal for females towards a thinner body shape, may be one factor that has led to an increase in the prevalence of female eating disorders. This problem is even further accentuated in adolescent females, during a time when feminine pubertal body shape changes are occuring which naturally increase the females' percent body fat. The results of the present study indicate that concern about weight and food intake among adolescent females is becoming very prevalent. More specifically, an exploration of the data strongly suggests a universality of the feeling of being fat, and a pervasiveness of dieting and other disordered eating attitudes and behaviors among a fairly large, representative sample of adolescent females in the community investigated. Findings also seem to indicate that some adolescent females are sufficiently concerned about their weight and appearance that they are no longer willing to wait for a safe scientific method of weight-control.

The curent study found a 17.5% positive response rate to the Eating Attitudes Test (EAT-26), which was similar to other studies that examined adolescent samples (Table 1). This relatively high positive response rate seems to indicate that a significant amount of "anorexic-like" behaviors and attitudes were found among this adolescent female sample. The author is not suggesting that a positive response to the EAT-26 allows for a clinical diagnosis of an eating disorder, but the possibility that the positive response rate found may represent a significant presence of maladaptive attitudes and behaviors about body weight and food intake previously found to be associated with anorexia nervosa and bulimia, is reason for concern. It also suggests that there is a need for further investigation into the eating attitudes and practices among secondary school-age female adolescents.

The mean Body Shape Questionnaire score of 97.74 found in the present study sample demonstrates a pervasiveness of concern over body shape amongmany of the subjects investigated. The BSQ developed by Cooper and associates (1987), measures concerns about body shape. In addition, the mean BSQ score of 141.2 for the anorexic-like group identified in the present study was higher than that reported by Cooper and associated (1987) for a sample of 38 bulimia patients (139.9). The data obtained with the BSQ instrument also seems to indicate that concerns about body shape among adolescent females are indeed becoming a health problem that must be dealt with.

In addition to the insight provided by test scores on the EAT and the BSQ instruments, much of the specific weight related data gained in the current study indicates an overall desire to be thin among adolescent females. Approximately three-quarters (71.3%) of the subjects investigated gave an affirmative response to the question, "Do you often feel fat?" Also 56.5% indicated that they were often, very often, or always worried about being or becoming overweight and 62.9% gave and often, very often, or always response to the question, "Have you been afraid that you might become fat (or fatter)?" (Table 2) These percentages are alarmingly high and possibly indicate just how much social pressure is being placed on the female to maintain a slim physique. The prevalence of concern over feeling fat found in the present study was consistent with the observations made by various other

researchers (Huenemann et al., 1966; Nylander, 1971; Moss et al., 1984; Greenfeld et al., 1987; Wooley & Wooley, 1984a). Preoccupation with appearance surely can not be very healthy and this concept is substantiated by the finding that 25.5% of the adolescent females investigated reported that they were concerned they might have an eating disorder and 10% reported having seen a doctor for an eating or weight related problem.

The findings also seem to suggest that many females perceive themselves to be overweight, when in fact they are not. Weight opinion data showed that over half (57.4%) of the subjects felt they were overweight or very overweight, but only 10.8% fell into the above average health risk zone of the Body Mass Index (BMI). Also, of the 20.3% (n=51) of the sample who were actually underweight according to the BMI results, only 27.5% (n=14) perceived themselves as underweight but 51% (n=26) felt they were overweight (Table 4). These types of weight perceptions support the hypothesis of a shift towards a thinner ideal body shape for females and again highlight the social pressures that have been placed upon the female to conform to present cultural standards.

The effect of these distorted weight perceptions becomes even more evident when one realizes that actual weight seems to make little difference to the females' self-concept and self-esteem. The findings of the 1984 survey of 33,000 women conducted by Glamour Magazine suggest that those who feel too fat (but are in fact not), share many of the same feelings as those who are too fat. Wooley and Wooley (1984a) are quoted in the article as saying, "what we see is a steadily growing cultural bias - almost no woman, of whatever size, feels she's thin enough" (p.199). The results of the current study concur with these observations and indicate that a large percentage of adolescent females are unhappy with their body weight even though most are not overweight and some are even underweight. Additional study data indicate that 59% of those subjects classified in the good health group wanted to lose 6 to 20 pounds and 29% of the below average health risk group reported wanting to lose an additional 1 to 10 pounds. This type of results certainly seem to demonstrate that a feeling of fatness and a desire to lose weight is common place among adolescent females.

An apparent pervasiveness of calorie restriction behaviors and attitudes found in this study was also consistent with past findings (Nylander, 1971; Nielson, 1979; Greenfeld et al., 1987). Almost half (42.3%) of the subjects indicated that they often or usually limit food intake and 41.9% reported that they would probably or definitely take a weight-control course if it was offered in their school's curriculm. Results also showed a fairly high percentage (36.0%) of weight fluctuations of 11 or more pounds within the last year. This type of information also seems to suggest that many of the subjects do not maintain a stable weight, but are more likely to go through frequent periods of weight loss and subsequent weight gain. The need for weight-control counselling among adolescent females seems apparent especially since the attempt to maintain weight below the body's natural "set point" through calorie restriction efforts has been shown to increase the susceptibility to anorexic or bulimic behaviors (Fries, 1974; Button & Whitehouse, 1981; Pyle et al., 1981; Thompson & Schwartz, 1982; Johnson et al., 1983; Polivy & Herman, 1985; Rodin et al., 1985).

As well as yielding data on the sample as a whole, this study also aimed to describe the characteristics of those scoring above the cut-off point established for the EAT-26. This allowed for a more precise investigation into a group of "normal" adolescent females from a general sample, who scored in the "anorexic-like" range as measured by the Eating Attitudes Test. The results showed that the 17.5% of the subjects who scored in the anorexic-like (A-L) range of the EAT-26, displayed a much higher percentage of abnormal attitudes towards food and eating (Table 6). Findings also showed that the A-L EAT group had a significantly higher mean BSQ score (141.2) than the normal EAT group (88.5) indicating a greater concern over body shape. Also, nearly all of the A-L EAT group (95.5%) reported that they very often or always worry about being or becoming overweight. These results would seem to suggest that a relatively high percentage of normal functioning adolescent females, under no specific pressure to remain thin, are preoccupied with concerns about eating and body shape and therefore engage in anorexic-like behaviors.

In conclusion, the findings of the current study seem to support the hypotheses adopted by the author which are as follows:

1. The general female adolescent population is differentially preoccupied with weight, food, and eating; and a desire for thinness.

2. Similar characteristics as those exhibited by anorexic and/or bulimic individuals are evident among the general adolescent female population.

3. The desire to be thin in the normal adolescent female population is positively correlated with anorexic-like behaviors.

There seems to be a need to educate adolescent females that the pursuit of thinness should not be central to their self-esteem and ultimate happiness. If a percentage of school-age females do display disordered eating attitudes and behaviors, it is important that individuals who hold influential positions are aware of this. Health and physical education teachers, guidance counsellors, coaches, and fitness leaders must help adolescents to recognize the importance of a healthy life style that emphasizes eating a well-balanced diet and exercising regularly and down plays the concept that thinness and happiness are synonymous. They must also help adolescent females to develop a realistic body image by emphasizing the acceptance of a healthy weight range and variations in body size.

This study has demonstrated that it is possible to gain information on the eating attitudes and behaviors of school pupils by questionnaire without apparent disruption of the school program. It is clearly evident that further investigation into the incidence of disordered eating attitudes and behaviors among the adolescent female students in Alberta schools is required. Perhaps this type of information should be gathered on an ongoing basis to gain more insight into the problem, and to address the subsequent need for developing intervention programs that could be implemented in a school setting. It is hoped that the results of the present study will stimulate further research in this area.

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APPENDIX

QUESTIONNAIRES

This questionnaire is organized in sections, each of which relates to attitudes and behaviors concerning food or eating and appearance. All of the results will be kept **STRICTLY CONFIDENTIAL. PLEASE TRY TO BE COMPLETELY HONEST IN YOUR ANSWERS**. Thank you.

Identification number:_____ Present age: _____ years

Present height: _____ cm. Present weight: _____ kg.

EATING PRACTICES INVENTORY (EPI)

Read each question carefully and place a check (√) in the blank which best applies to you.

1. In your opinion, you are now...

____very underweight
____underweight
____average
____overweight
____very overweight

2. If you feel overweight, how much weight would you like to lose?

____ 1 to 5 lbs. ____16 to 20 lbs.
____ 6 to 10 lbs. ____ 21 to 25 lbs.
____ 11 to 15 lbs. ____ more

3. If you feel underweight, how much weight would you like to gain?

____ 1 to 5 lbs. ____ 16 to 20 lbs.
____ 6 to 10 lbs. ____ 21 to 25 lbs.
____ 11 to 15 lbs. ____ more

4. What is the most you've weighed during the past year?

_____ lbs.

5. What is the least you've weighed during the past year?

_____ lbs.

6. Do you often "feel fat?"

____ yes ____ nc

7. Do you get uncontrollable urges to eat and eat until you feel physically ill?

____ yes ____ no

8. Have you ever had an episode of eating a large amount of food in a short period of time (an eating binge)?

____ yes ____ no

9. Do you consider yourself a binge eater? ____ yes ____ no

10. How often do you worry about being or becoming overweight?

____ never
____ rarely
____ sometimes
____ often
____ very often
____ always

11. How often do you weigh yourself?

____ never
____ less than once every four weeks
____ 1 to 3 times every four weeks
____ once every week
____ 2 to 6 times every week
____ once every day
____ more than once every day

12. Are you presently dieting?

____ no
____ yes, to gain weight
____ yes, to lose weight
____ yes, because of a health related problem (e.g. food allergy, diabetes)

13. How often do you diet?

____ never
____ rarely
____ part of each year
____ several days each month
____ several days each week
____ every day
____ every meal

14. Have you ever vomited after eating?

____ yes ____ no

15. How frequently do you vomit after eating?

____ never
____ 2 to 6 times every week

____ less than once every four weeks
____ 1 to 3 times every four weeks
____ once every week
____ once every day
____ more than once every day

16. How often do you engage in binge eating?
____ never
____ less than once every four weeks
____ 1 to 3 times every four weeks
____ once every week
____ 2 to 6 times every week
____ once every day
____ more than once every day

17. Do you feel miserable and annoyed with yourself after an eating binge?
____ yes ____ no

18. Which statement best describes your eating behavior?

____ Eat whatever I want, whenever I want it.
____ Usually eat whatever I want, whenever I wanf it.
____ Often eat whatever I want, whenever I want it.
____ Often limit food intake, but often "give in."
____ Usually limit food intake, rarely 'give in.'
____ Constantly limiting food intake, never 'give in.'

19. If a special weight-control course were offered at this school, would you take it?

____ no opinion
____ definitely no
____ probably no
____ probably yes
____ definitely yes

20. How often do you engage in strenuous exercise?
____ never
____ less than once every four weeks
____ 1 to 3 times every four weeks
____ once every week
____ 2 to 6 times every week
____ once every day
____ more than once every day

21. How often do you count the number of calories you use by exercising?
____ never
____ less than once every four weeks
____ 1 to 3 times every four weeks
____ once every week
____ 2 to 6 times every week
____ once every day
____ more than once every day

22. Are there times when you are afraid that you cannot voluntarily stop eating?

____ yes ____ no

23. If you binge eat, do you usually binge eat when you are alone?

____ yes ____ no

24. If you binge eat, do you usually binge eat with high-calorie food like candy, cake, chips, etc.?

____ yes ____ no

25. Which of the following, if any, have you used to CONTROL YOUR WEIGHT? Circle the appropriate number according to the following scale, to answer questions A through J.

1 = never
2 = less than once every four weeks
3 = 1 to 3 times every four weeks
4 = once every week
5 = 2 to 6 times every week
6 = once every day
7 = more than once every day

	Circle one number
A. Moderate calorie restriction	1 2 3 4 5 6 7
B. Skipping meals	1 2 3 4 5 6 7
C. Fasting (no eating for an entire day)	1 2 3 4 5 6 7
D. Exercise to burn calories	1 2 3 4 5 6 7
E. "Crash" diets	1 2 3 4 5 6 7
F. Liquid formula diets	1 2 3 4 5 6 7
G. Diet pills	1 2 3 4 5 6 7
H. Diuretics (water pills)	1 2 3 4 5 6 7
I. Laxatives	1 2 3 4 5 6 7
J. Self-induced vomiting	1 2 3 4 5 6 7

26. Have you gained more than 10 lbs. in the past year? If yes, how many times has this happened?

____ yes ____ times ____ no

27. Have you lost more than 10 lbs. in the past year? If yes, how many times has this happened?

____ yes ____ times ____ no

28. Have you ever worried that you might have an eating disorder?

____ yes ____ no

29. Have other people ever worried about your being too thin?

____ yes ____ no

30. Have you ever seen a doctor for weight or eating problems?

____ yes ____ no

If yes, at what age? ____ years.

31. How old were you when your periods started?

_____ years _____ not yet

32. Have your periods stopped at any time during the past year?

____ yes ____ no

If yes, a) for how many months? ____

b) was this due to physical illness? ____

c) was this at a time you had lost weight? ____

33. If you feel you have an eating problem, were there any particular events in your life, either positive or negative, which were connected with the onset of your eating problems? Answer with a zero "0" if not applicable. Answer with a one "1" if applicable to you.

____ Death of significant other (i.e., friend, relative, etc.)
____ Leaving home
____ Illness or injury to self
____ Failure at school or work
____ Difficult sexual experience
____ Illness or injury to family member or significant other
____ Problems in romantic relationship
____ Family problems
____ Teasing about appearance
____ Prolonged period of dieting
____ Pregnancy

____ School transition (new school, move from Jr. high to Sr. high)
____ Moving to another area or city
____ Problems with friends or peers
____ Puberty (i.e., breast development, onset of period)
____ Other: Please specify _____

EATING ATTITUDES TEST (EAT-26)

Please answer all questions on the answer sheet provided, by blackening in the appropriate response. Do not write your name on the answer sheet. Answer according to the following scale.

A = never	D = often
B = rarely	E = very often
C = sometimes	F = always

1. Am terrified about being overweight.
2. Avoid eating when I am hungry.
3. Find myself preoccupied with food.
4. Have gone on eating binges where I feel that I may not be able to stop.
5. Cut my food into small pieces.
6. Aware of the calorie content of foods that I eat.
7. Particularly avoid foods with a high carbohydrate content (e.g. bread, rice, potatoes, etc.).
8. Feel that others would prefer if I ate more.
9. Vomit after I have eaten.
10. Feel extremely guilty after eating.
11. Am preoccupied with a desire to be thinner.
12. Think about burning up calories when I exercise.
13. Other people think that I am too thin.
14. Am preoccupied with the thought of having fat on my body.

15. Take longer than others to eat my meals.
16. Avoid foods with sugar in them.
17. Eat diet foods.
18. Feel that food controls my life.
19. Display self-control around food.
20. Feel that others pressure me to eat.
21. Give too much time and thought to food.
22. Feel uncomfortable after eating sweets.
23. Engage in dieting behavior.
24. Like my stomach to be empty.
25. Enjoy trying new rich foods.
26. Have the impulse to vomit after meals.

BODY SHAPE QUESTIONNAIRE (BSQ)

Please answer according to how you have been feeling about your appearance over the **PAST FOUR WEEKS**. All answers should be recorded on the answer sheet, according to the following scale.

A = never	D = often
B = rarely	E = very often
C = sometimes	F = always

1. Has feeling bored made you brood about your shape?
2. Have you been so worried about your shape that you have been feeling that you ought to diet?
3. Have you thought that your thighs, hips or bottom are too large for the rest of you?
4. Have you been afraid that you might become fat (or fatter)?
5. Have you worried about your flesh not being firm enough?

6. Has feeling full (e.g., after eating a large meal) made you feel fat?

7. Have you felt so bad about your shape that you have cried?

8. Have you avoided running because your flesh might wobble?

A = never	D = often
B = rarely	E = very often
C = sometimes	F = always

9. Has being with thin women made you feel self-conscious about your shape?

10. Have you worried about your thighs spreading out when sitting down?

11. Has eating even a small amount of food made you feel fat?

12. Have you noticed the shape of other women and felt that your own shape compared unfavourably?

13. Has thinking about your shape interfered with your ability to concentrate (e.g., while watching television, reading, listening to conversations)?

14. Has being naked, such as when taking a bath, made you feel fat?

15. Have you avoided wearing clothes which make you particularly aware of the shape of your body?

16. Have you imagined cutting off fleshy areas of your body?

17. Has eating sweets, cakes, or other high calorie food made you feel fat?

18. Have you not gone out to social occasions (e.g., parties) because you have felt bad about your shape?

19. Have you felt excessively large and rounded?

20. Have you felt ashamed of your body?

21. Has worry about your shape made you diet?

22. Have you felt happiest about your shape when your stomach has been empty (e.g., in the morning)?

23. Have you thought that you are the shape you are because you lack self-control?

A = never	D = often
B = rarely	E = very often
C = sometimes	F = always

24. Have you worried about other people seeing rolls of flesh around your waist or stomach?

25. Have you felt that it is not fair that other women are thinner than you?

26. Have you vomited in order to feel thinner?

27. When in company have you worried about taking up too much room (e.g., sitting on a sofa or a bus seat)?

28. Have you worried about your flesh being dimply?

29. Has seeing your reflection (e.g., in a mirror or shop window) made you feel bad about your shape?

30. Have you pinched areas of your body to see how much fat there is?

31. Have you avoided situations where people could see your body (e.g., communal changing rooms or swimming pools)?

32. Have you taken laxatives in order to feel thinner?

33. Have you been particularly self-conscious about your shape when in the company of other people?

34. Has worry about your shape made you feel you ought to exercise?